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PLAN AND REALITY IN A PERUVIAN VILLAGE

Battelle PDP Working Paper No. 14

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PREFATORY NOTE

Early in 1979, the Agency for International Development (AID) indicated a strong interest in learning more about an unusual development effort begun several years earlier in the Department of Cajamarca in northern Peru. Battelle Population and Development Policy Program (PDP) prepared this report to provide development planners with information about the 18-year development plan that the Servico Silvo Agropecuario (SESA) has been using in Cajamarca. The request fit well with Battelle PDP objectives, which center on an understanding of population dynamics as they interact with the development process. Specifically, we hoped to identify whether a development effort was having or could have a substantial impact on such demographic variables as fertility, mortality, and migration. In that context, the field investigation involved extensive interviews with women living in the project area (see Appendix A for the sample), Pariamarca; participant-observation by a Battelle PDP staff anthropologist, Dr. Sara Nerlove; and a penetrating series of interviews with Ing. Pablo Sánchez, rector of the Universidad Nacional Técnica de Cajamarca, native of Cajamarca, and principal thinker behind the eighteen-year development plan. The sum of these research strategies is a complex picture of plan and reality, elucidation of a road map for change, and direct observations of the execution of the plan at the site where it has been longest in operation.

The first part of the report sketches a history of SESA in the context of regional development plans.

Part II sets out, in more detail than has been provided anywhere else, the steps and components of the 18-year planning cycle which Ing. Sanchez has used to guide each activity of the Pariamarca experiment. The period of 18 years was chosen because it was the length of time required for new tree plantings to reach a level of maturity that would permit both exploitation and maintenance of the reforested area, a condition central to a restored and balanced ecosystem.

Part III focuses on the women of Pariamarca and investigates their education, work, marriage and family life, and reproductive knowledge and practices.

Finally, Part IV offers preliminary recommendations, based on the examination of the effects of the SESA plan.

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We sincerely thank the people of Pariamarca who gave us many hours telling us about their lives, in particular: Segundo Rufino Alvarez, a community leader very concerned with the future of Pariamarca, who granted us a lengthy interview; Graciela Ascencio Cerna and Arquimedes Sangay, who looked after Dr. Nerlove and shared with her their residence, the communal store; and Artemio Ascencio Cerna, who accompanied Dr. Nerlove to many Pariamarcan homes.

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INTRODUCTION

Common to all of highland Peru, and indeed to cultivated Sierra in many parts of the world, are such problems as water scarcity, poor soil, erosion, and high levels of migration prompted by the need to escape such hardships in order to survive. In an effort to ease the ecological crises and to stem the high flow of migration out of the Sierra, the government of Peru initiated an intensive reforestation effort during the mid-1960s. The program consisted of projects throughout the countryside. As a result, 115,000 hectares, 90 to 95 percent of them in the Sierra, were reforested. Among the reforestation projects in Peru, the Servicio Silvo Agropecuario (SESA) Plan, operating in Pariamarca, Cajamarca (see Figure 1) is unique: it is the only reforestation project which has been incorporated into an integrated rural development effort.

Pariamarca is a small community, typical of rural Cajamarca, the second most populous department after Lima in Peru. The people of Cajamarca are, for the most part, Spanish-speaking, as are many inhabitants of the northern Peruvian highlands. Demographically, Pariamarca is characterized by high fertility, high infant and child mortality, and a strong pattern of temporary, as well as some permanent, out-migration of adult males in search of work. Cajamarca's average completed family size of 7.3 indicates a rapid growth rate.

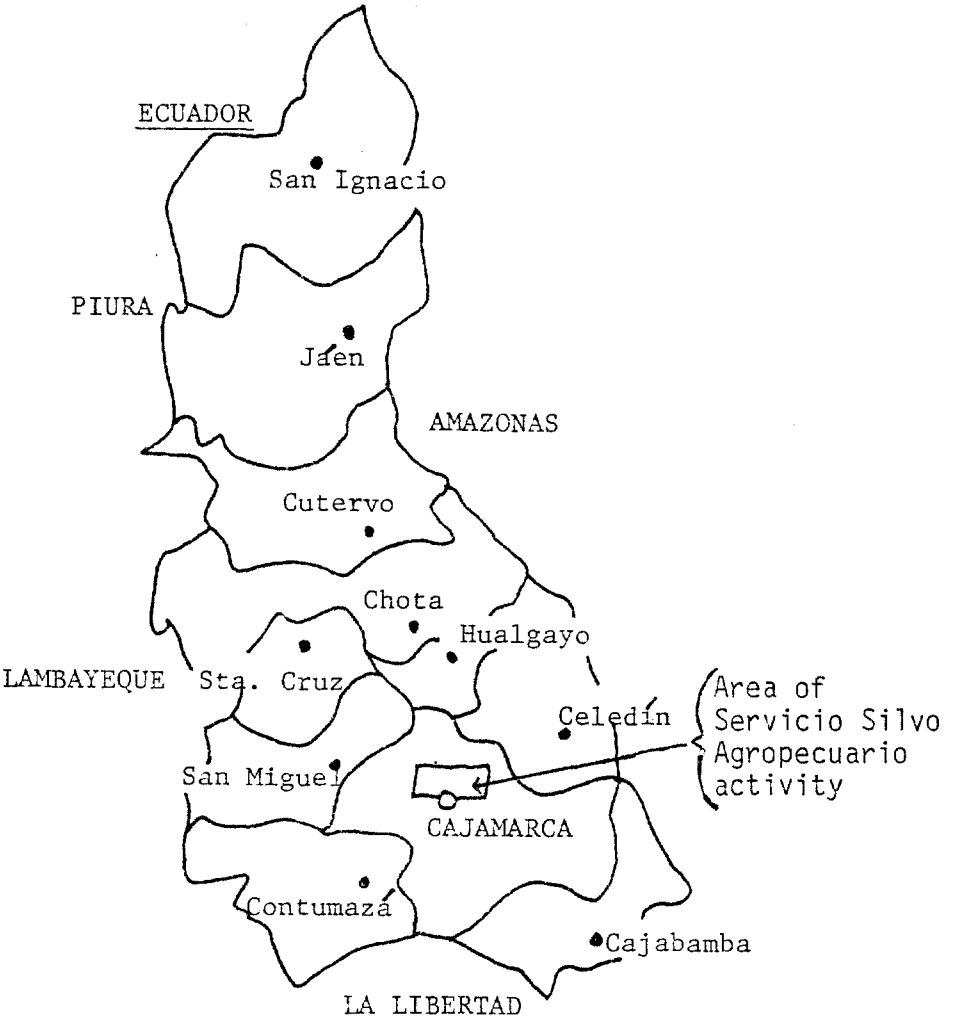
In Pariamarca, the years 1976, 1977, and 1978 were very dry; 1977 was the driest of these years. This succession of drought years appears to be a result of the progressive desertification of the area, rather than one of fluctuation in climate. At one time, the cycle of individual water allocation for irrigation repeated every 1-1/2 months; now it repeats every 4 months, creating problems for the farmers. For example, peas, an important Pariamarcan crop, take three months to grow. A farmer may have water for planting the seed and then lose his crop for lack of water while the peas are growing.

Twelve years ago, Ing. Pablo Sánchez, head of what would become the Servicio Silvo Agropecuario of the Universidad Nacional Técnica de Cajamarca, began a small-scale reforestation project in Aylambo. The project covered four hectares outside the city of Cajamarca, Peru. As a direct result of Ing. Sánchez's efforts, the brown, rocky hillsides of Aylambo have been transformed into lush green forests. The precipitation runoff which used to erode the land is now captured in trenches and storage tanks and provides water for drinking, crops, and a lagoon stocked with fish.

In 1976, this resource-generation project was expanded to include the community of Pariamarca. Transcending mere tree planting, the project became an integrated rural development effort guided by an 18-year planning cycle.

Ing. Sánchez's efforts have drawn the attention of the AID Mission in Lima, but very few data exist on the Pariamarcan experiment. The Battelle Population and Development Policy Program (PDP) team undertook a short-term study within the community to delineate the main features of the Sánchez Plan, to describe the effect that the plan has had on the social and reproductive life of Pariamarca, and to discuss the implications of the plan for population and development.

Figure 1. The Provinces of the Department of Cajamarca.



PART I. PERSPECTIVE: DEVELOPMENT IN CAJAMARCA

DEVELOPMENT ISSUES IN THE DEPARTMENT OF CAJAMARCA

Only a handful of studies have analyzed or proposed solutions for the development problems plaguing the Department of Cajamarca. It is difficult to discern whether the extant research documents and the government policies influenced Ing. Sánchez's 18-year planning cycle, or whether Sánchez himself played a strong role in the development research and was thus able to influence the research and policy development that led to the Servicio project. The latter suggestion seems to be the more plausible.

In the early 1960s, a Belgian firm (with a staff that included people whom Ing. Sánchez had met during his graduate-school days in Belgium) performed soil and water assessment studies in the highlands of Cajamarca. These studies, along with other research completed at the Universidad Agraria (La Molina) in Lima, formed the basis in 1974 for the Proyecto de Plantaciones Forestales con Fines Industriales (Cabrejos et al., 1974). The "Plan de Forestales" (Forestry Plan) delineated experts' opinions of how 180,000 hectares of land in the northern Sierra could be forested in 18 years. The authors of the plan argued that, for the northern areas of Huamachuca, San Marcos, Cajabamba, Chotano, Llaucano, and Cajamarca, the forestation plan could fulfill certain objectives of the Plan Nacional del Peru 1971-1975, (INP, 1971, cited in Cabrejos, et al., 1974), which emphasized zonal specialization to ensure the best use of natural and human resources.

Two diagnostic reports outlined the development problems in the Cajamarcan region. The 1973 Oficina de Desarrollo del Norte (ORDEN) Report (Figure 2) stressed such neoclassical economic indicators of underdevelopment as lack of capital, investment, trade mechanisms, etc. The 1979 Programa de Desarrollo de Cajamarca (PRODESCA) Report (Figure 3) demonstrated a more specific study of the area; two (numbers 1 and 8) of the development problems listed in this report relate to population pressures. The Comité de Desarrollo de Cajamarca responded to the 1979 PRODESCA Report by orchestrating 14 development projects (Figure 4). One of these projects is the Servicio Silvo Agropecuario (SESA) program. The PRODESCA program has been criticized because there was no coordination of effort among the different components of the program. Indeed, some of the solutions to the problems outlined in the report may intensify the very problems they were meant to solve. For example, the report cited artisan ventures as a sign of underdevelopment (Figure 3, item 6); yet, artisan schools are a crucial part of the SESA plan.

Figure 2. 1973 CRDEN Report:

Hindrances to development in Cajamarca.

1. The minifundio land ownership system provides employment to small farmers and herders only during peak planting and harvest seasons. This exploitation of labor causes social and political problems.
2. Government investment reaches only two percent of those employed in the region.
3. Agrarian reform has been applied very slowly.
4. There is high migration to the coast for employment.
5. There is a high illiteracy rate.
6. There is a very low production rate due to:
   - Use of traditional methods of cultivation;
   - Use of the worst seed;
   - Disorganization of producers;
   - Lack of a communication infrastructure;
   - Lack of credit systems
   - Lack of capital.

Source: Oficina Regional de Desarrollo del Norte (CRDEN), Anâlisis de la Subregión Cajamarca. Chiclayo: Instituto Nacional de Planificación, 1973.

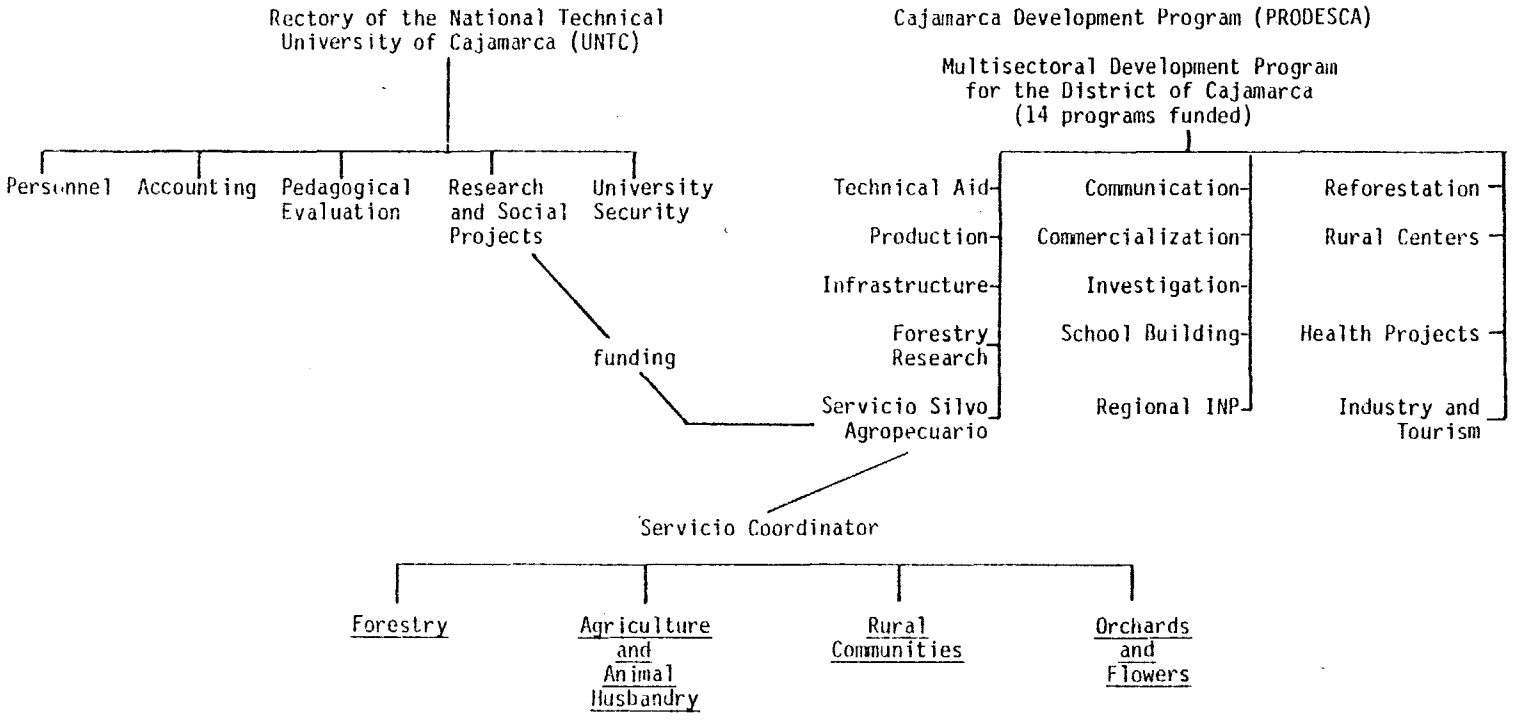
Figure 3. 1979 PRODESCA Report:

Hindrances to development in Cajamarca.

1. The average ratio of man to usable land is 3.3 persons per hectare with a range of 1.72 to 7.51 persons per hectare.
2. The minifundio system is unable to reach an economy of scale.
3. There is no integrative planning between individually and communally owned land.
4. There is no infrastructure; in other words, there are no irrigation, road, communication, or distribution systems.
5. There is no financial backing for projects.
6. Sixty-three percent of all industrial ventures employ fewer than five people, and most industry is of an artisan nature.
7. The region has unfavorable terms of trade with the coastal areas of Peru.
8. The introduction of services, especially education, has not kept up with the population growth.

Source: Programa de Desarrollo de Cajamarca (PRODESCA). Programa de Desarrollo Microregional Cajamarca. Cajamarca: Oficina Regional de Planificación, Oficina Zonal de Cajamarca, 1979.

Figure 4. Relationship of the Servicio Silvo Agropecuario to both UNTC and PRODESCA (1979).



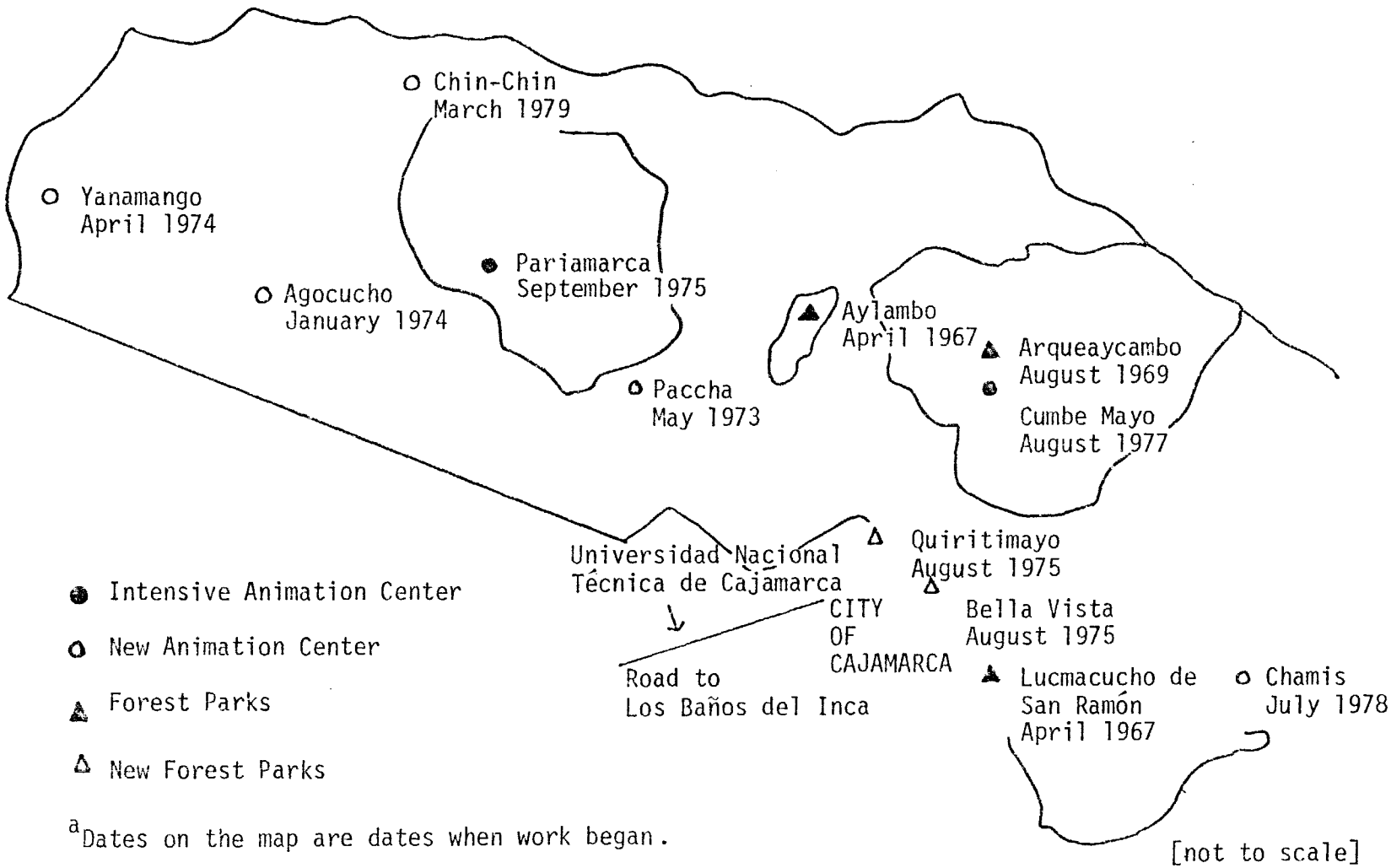
THE HISTORY OF THE SERVICIO SILVO AGROPECUARIO

Ing. Pablo Sánchez, the father of the Servicio Silvo Agropecuario Plan, is a native of Cajamarca. He returned to his birthplace after receiving training in agronomy and forestry at the Universidad Agraria (La Molina) in Lima, and at universities in Argentina and Belgium. His return was unusual: few with his expertise, so crucial to development, have remained in Peru; fewer still, outside of Lima; and even fewer in their area of origin. In the late 1950s, while studying at the Universidad Agraria (La Molina), Ing. Sánchez began thinking about reforestation. He returned to Cajamarca with the idea of initiating a simple reforestation project, but soon discovered that such an endeavor had to be considered within the framework of the development of the region.

In 1966, with the financial backing of Senator Malpica of Cajamarca, Ing. Sánchez built a nursery and an office building at the Universidad Nacional Técnica de Cajamarca (UNTC) and began experimenting with plants. By 1976, Ing. Sánchez had arranged for the university to buy some land, four hectares of useless highland outside of Cajamarca. He took his plants to a caserío (hamlet) called Aylambo and started working on his regeneration model, "Tipo Aylambo." The model, called the "Programa Forestal," worked. Soon it became known as the "Proyecto Forestal," and later as the Proyecto de Aprovechamiento de Laderas Interandinas" (Inter-Andean Slope Utilization Project). Five such projects exist at the present time, but they serve only a few families.

In 1972 and 1973, a Belgian firm contributed two million soles, the project's first major donation. Since that time, UNTC has been the primary supporter of the project which has been renamed the "Servicio Silvo Agropecuario of the UNTC." The Ministry of Agriculture and the Comité de Desarrollo de Cajamarca have also provided generous funding. Figure 4 (above) shows the relationship of the Servicio to both the UNTC and PRODESCA in 1979. Figures 1 (above) and 5 pinpoint the work of SESA in the Province of Cajamarca. The Animation Centers in Figure 5 refer to integrated rural development projects involving existing communities, whereas the Forestry Parks are small models of forestation and artisan school development.

Figure 5. Work of SESA in the Province of Cajamarca (June 1979).



[a]Dates on the map are dates when work began.

PART II. The 18-YEAR PLANNING CYCLE

The 18-Year Planning Cycle of the Servicio Silvo Agropecuario (SESA) of the Universidad Nacional Técnica de Cajamarca is divided into two nine-year phases, each composed of three three-year periods. The plan is based on the 18 years required to reach an ecological balance through a combined process of reforestation[1] and irrigation. The main components of the plan are technical assistance in constructing an infrastructure, reforestation, agriculture, herding, and social development, focusing on community organization and practical education. The initial plan is directed at areas close to the City of Cajamarca, but Ing. Pablo Sánchez hopes to replicate this plan in many other Sierra communities in the Department of Cajamarca.

The 18-Year Planning Cycle is currently being implemented in two communities and has been initiated in five others. All Servicio activity sites are called Centros de Animación (Animation Centers). Pariamarca is furthest along in the 18-Year Planning Cycle, which, though initiated in 1973, has only recently completed Year 3 of its projected work schedule.

According to the Servicio, Pariamarca has 250 families (1978). Greater Pariamarca, considered by community members to total about 4,000 people, includes the populations of some 11 annexes (a land unit smaller than a population center) in addition to the pueblo or town center of Pariamarca. Some of these annexes have an identity that is more clearly distinct from Pariamarca than is that of the others.

Table 1 lists projects planned for some of the areas under SESA direction. Different levels of "rurbanización" (villages with small-scale industry and basic community services) are planned for different centers. Plans for Cumbe Mayo are not as elaborate as are those for Pariamarca, for example. Ing. Sánchez explained that prior study of the area, along with an evaluation of the community's receptiveness to SESA, determines the level of development planned for each center.

PARIAMARCA: THE PLACE AND THE PEOPLE

Pariamarca is a Spanish-speaking, rural peasant community located along an unpaved road called Camino Real, 10 kilometers northwest of the City of Cajamarca, the municipal head of the Department of Cajamarca in the Andes in northern Peru. Pariamarca's altitude ranges from 2,700 to 3,200 meters above sea level. The traditional rainy season is from October to May; but there appears to be a change in the climate of the region, with a trend toward a drier climate and potential desertification of the Sierra region.

Greater Pariamarca is situated on rugged slopes of poor, rocky, and badly eroded soil. Pariamarca overlooks the western end of the wide, lush green valley of Cajamarca, a valley that contains thermal springs and the comfortable resort, Los Baños del Inca (The Baths of the Inca). At night, the twinkling lights of Los Baños contrast sharply with the darkness of Pariamarca. Spiny vegetation, such as brush, cactus, and

TABLE 1

STARTING DATES AND PLANS IN SOME OF THE SERVICIO SILVO AGROPECUARIO ANIMATION CENTERS

Animation Center[a]	Starting Date	Forestation Parks	Orchards and Vegetable Gardens	Communal Stores	Potable Water Systems	Schools	Terraces for Forestry and Animal Husbandry	Road Repair	Water Tanks	Reservoirs	Roads and Bridges	Artisan Schools	Housing	Irrigation Canals	Playground	Student Lunchrooms
Lucmacucho de San Ramón	April 1967	X					X	X[b]		X	X		X			
Agocucho	January 1974	X	X	X	X	X			X							X
Yanamango	April 1974	X	X		X	X		X	X							
Pariamarca	September 1975	X	X	X (3)	X	X[c]	X	X	X (5)	X	X	X			X	
Cumbe Mayo	August 1977	X	X	X			X							X		

a Different levels of development--determined by a study of the area, along with an evaluation of the community's receptiveness to the Servicio Silvo Agropecuario--are planned for different centers.

b A road.

c A 12-room school.

century plants dominate the area. These plants serve as property boundaries and as important sources of food and firewood, but they also compete with crops for water. Some scattered stands of eucalyptus trees remain from a pilot reforestation project of the 1960s.

The town center of Pariamarca includes a flower-covered plaza which is surrounded by barbed wire and bordered by four piletas (water taps and low cement basins). The plaza formerly served as a soccer field. Facing the plaza, and dominating the scene, is the Catholic church, which houses the posta médica (medical post) in its courtyard. Only partially fronting on the plaza is the Evangelical Protestant church, which serves about two percent of Pariamarca's population. The government elementary school is up the block, just north of the plaza. Further up the hillside and west of the plaza are the Servicio buildings, constructed as part of the Servicio Development Plan. They include the tambo (community store), the escuela azul (blue school), the huerta escolar (school garden), and the taller de tejidos (artisan textile workshop and school) now under construction. The municipal building will ultimately be located at the present site of the public elementary school, and the seed bank will be across the street. Both the municipal building and the seed bank will thus be near, but not part of, the Servicio complex. In the Servicio plan, the communal store, school, and medical post are always expected to be in close proximity to one another.

Sheepherding is important in this agricultural community, and most families keep at least a few sheep for their wool. Most families also raise guinea pigs, chickens, and pigs. Beasts of burden are more often burros than horses, but few people have them. Though the Department of Cajamarca is the richest dairy area in Peru, cows are rare in Pariamarca because of their cost.

Residents depend upon the cultivation of barley and wheat for their major subsistence. Maize, potatoes and such tubers as ocas and ollucos, oats, and legumes are also important crops. Garden produce includes squash, cabbage, and herbs. The preferred cash crop is garlic, but its cultivation has suffered recently because of drought conditions (garlic requires irrigation every eight days) and because of a fungus brought in from southern Peru in 1977. Other agricultural cash crops include alfalfa, potatoes, and some fruit; the sale of livestock and eggs also contributes to the agriculturally based economy.

Agricultural technology is simple. The principal tools are a wooden plow drawn by a team of oxen (often rented), garden spades for irrigation work, shovels, crowbars, sickles, sticks, and the ubiquitous machete. The Pariamarquinos engage in the practice of yungi: a few community members help a farmer in his fields in return for a small portion of the harvest.

Most Pariamarcan men are farmers, each working small holdings usually considered to belong to the husband and wife jointly or as-yet-undivided land belonging to their parents or to their wives' parents. Inheritance in Pariamarca is bilateral. The settlement pattern of the community is dispersed. Most Pariamarquinos live protectively near at least some fragment of the widely scattered plots which they cultivate.

The economic and residential unit in Pariamarca is the nuclear household. Single-family dwellings, one to a homestead, usually consist of one or two rooms and have a dirt floor, adobe walls, and a roof of fired

earthen tiles. Families store household items in a loft in the house; farming equipment and animal fodder is kept in a pajera (loft) away from the house, to reduce the hazard of fire.

A Pariamarquino of 1979 has few durable goods. The cost of owning a radio, bicycle, or sewing machine is, of course, greater than the initial purchase price. Radios need batteries; a bicycle or sewing machine must be maintained. Beyond that, to sew, one must have fabric, thread, and other supplies; the ready availability of inexpensive manufactured clothing has recently begun to make a sewing machine an even less attractive or necessary investment. Nonetheless, despite their cost, radios are a common channel of communication--more common than meetings, newspapers, and all other media, according to a 1978 survey of 145 family heads taken by the Servicio. In Pariamarca, however, the primary means of relaying news is still word of mouth. One community leader estimated that:

- One-third of the population has radios.
- One in 20 has a record player.
- One in 100 has a clock or wristwatch.
- One in 200 has a bicycle.
- One in 300 has a "primus" stove.
- One in 400 has a sewing machine.

The community has only one car and one truck. The car used to carry Pariamarcan passengers to Cajamarca three times a week; it no longer services the community in this way. Pariamarca has no telephone, post office, bus service, or general market place. Two people in the community have motorcycles; one owner is in charge of the medical post, the other is a young family man who commutes each day to a clerical job at the hospital in Cajamarca. Two people in the community have typewriters which are often used by individuals or by groups in the community to write solicitudes (applications) to Servicio personnel or to government officials in Cajamarca for goods and services. An anthropologist who worked in the community gave the head of the medical post a television set, but the man sold it, and now there is no television in Pariamarca.

Pariamarca has neither electricity nor modern plumbing. Once a year, a generator is brought into the community for the festival of the patron saint, la Virgen del Rosario. Sanitary facilities are limited to one latrine in the medical post and an inoperative flush toilet with a septic tank near the escuela azul (blue school).

The source of the community's water, other than the scanty rainfall, is a natural spring, 50 meters below the continental divide and 250 meters above the center of the community. Sixteen families have cold running water in their homes; two public taps and a tap in the medical post are all that is available to the rest of the community. Most families get their drinking water from pozos (waterholes) that are cleaned

and filled every 15 days, but the water in the earthen reservoirs often stagnates, and the reservoirs frequently run dry before the end of the allocation period. Agricultural water rights are inherited, and "irrigation turns" (access to water) vary in frequency and duration; recently these turns have become increasingly less frequent and a constant source of conflict in the community.

In Pariamarca, the only health facility is a posta médica (medical post); the nearest pharmacy is in Cajamarca. In charge of the medical post is a male nurse with secondary school education; he is a native Pariamarquino employed by the government of Peru. Also attending patients is a female nurse in training who is fulfilling her rural-service requirement. There is no trained doctor in Pariamarca, even on a periodic basis, nor are people likely to seek treatment from doctors because of the expense of the medicines which they prescribe. Most people in Pariamarca use herbs as medical treatment (78 percent, N=127; Servicio Silvo Agropecuario Survey (SESA), 1978).[2] Some respondents reported that these herbs are obtained from a curioso (folk practitioner).[3] The nurse in charge of the medical post sells a few medical supplies that he has received as samples. The most frequent illnesses in the area are grippe (adults) and measles (children). Tuberculosis is common among young people, and diarrhea and bronchitis are the most common causes of mortality for children under two years of age. Typhoid epidemics also occur periodically.

Religion and politics are not strong influences in the daily life of Pariamarquinos. The vast majority of community members are nominally Roman Catholic, but religion appears to play little role in their lives. Few homes have altars. A mass is performed in the church once a week on Saturday mornings, and every week two nuns give religious charlas (talks) to the Mothers' Club. Traditional political offices include the síndico de la iglesia (sexton), teniente (constable), agente municipal (municipal agent), and juez de paz (justice of the peace), but these officers seem to play no role in the community's decision-making processes. Other political offices include the members of the Comité de Agua Potable (Committee of Potable Water), a committee which was probably formed about 10 years ago when the tubing and taps for the central plaza were installed.

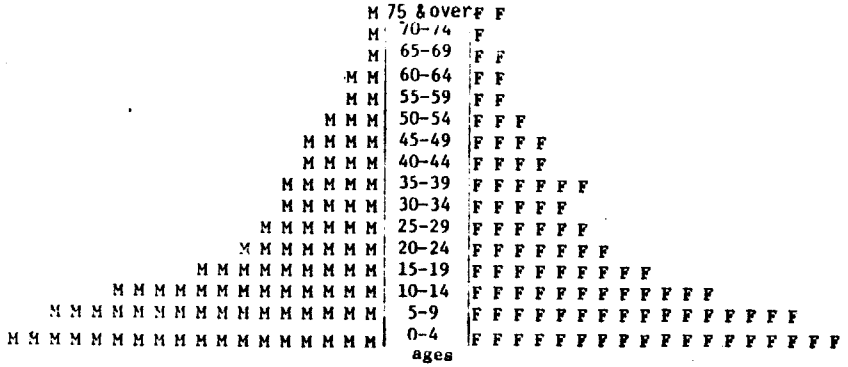
Figure 6 shows relative age and sex pyramids for Greater Pariamarca,[4] the Province of Cajamarca, the Department of Cajamarca, and rural Peru, from the 1972 Peru census. The age-sex structure of the Province of Cajamarca is no different from that of the Department of Cajamarca or that of the rest of the country and reflects the very high birth rate and also the high child mortality rate throughout the country. In Greater Pariamarca, where the mortality rate of the population over the age of five is low, it is apparent that an increasing percentage of the women have entered their fertile years since 1972.

THE PARIAMARCA EXPERIMENT

The following is a detailed description of the 18-Year Planning Cycle of the Servicio Silvo Agropecuario of the Universidad Nacional Técnica de

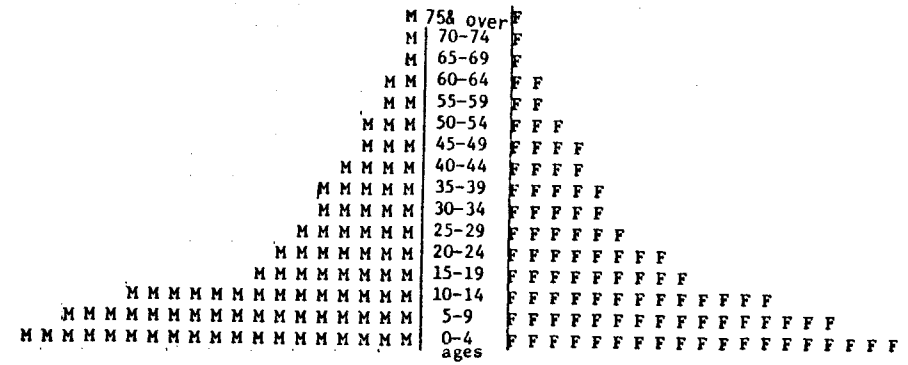
rural populations in Peru.

RURAL PERU from 1972 Census
(ONEC) 1974



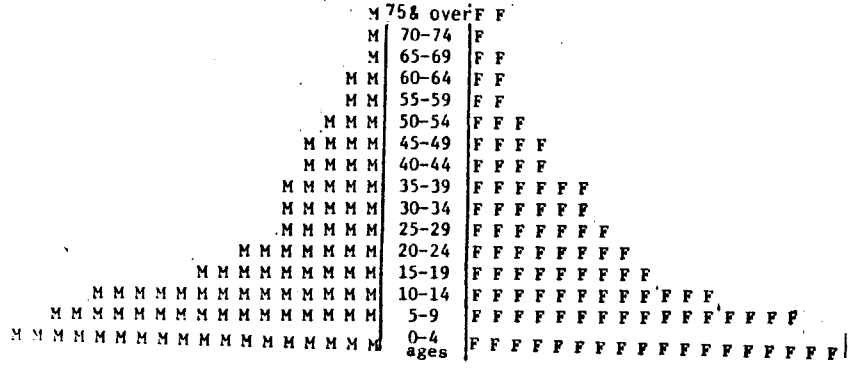
N = 5,479,713

RURAL DEPARTMENT OF CAJAMARCA
from 1972 Census
(ONEC) 1974



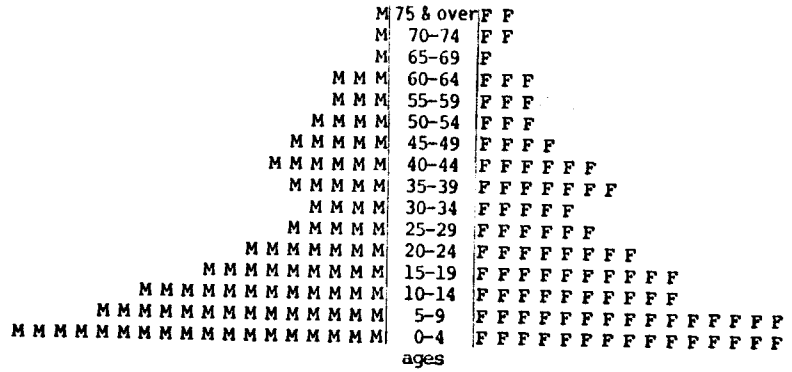
N = 759,095

RURAL PROVINCE OF CAJAMARCA
from 1972 Census
(ONEC) 1974



N = 157,093

GREATER PARIAMARCA
from 1972 Census
data



N = 2491

M = Male
F = Female

Every M and F represents 0.5 percent of the population being represented.

Cajamarca. (Appendix B contains an outline version of the 18-Year Planning Cycle of the Servicio Silvo Agropecuario). The first three years of the plan have been carried out in Pariamarca. The remaining segments of Phase I and all of Phase II have not yet been achieved. This planning cycle will be used to direct all Servicio projects, although not all projects will be as extensive as that of Pariamarca. (See Table 1 above for differences in projects according to community.) In part, the desires and needs of each community will determine the extent of development for any given area.

Phase I: Mobilization (Years 1-9)
Period 1: Initiation (Years 1-3)
Year 1: The Servicio Gains Acceptance in the Community

The Servicio planners want a dynamic relationship with the community. If the community acts, the project progresses; if the community loses interest, the project team diminishes its efforts as well. The planners believe that this kind of reciprocal relationship is essential to the ultimate goal of autonomy and self-sufficiency. They want community members to be impatient to accomplish more work.

Needs assessment. The Servicio team members first conduct an assessment of the social and economic needs of the community. Indicators such as educational level are coupled with diagnostic studies of the natural resources (e.g., soil, climate, geology, hydrology, and aerology).

Conversations with community leaders and members. Servicio team members initiate conversations with identified community leaders and question them about the need for such projects as providing water for drinking or irrigation. Servicio personnel elicit a discussion of the ways in which such projects might be carried out. Usually, the community leaders themselves point out that such projects are impossible without financial assistance or technical guidance or both.

Presentation of the model project. To create a balanced ecosystem that includes man, a recent arrival on the evolutionary scene, will require teaching and learning. Adult male members of the community and male students (and one female student to date) have been taken to Aylambo, the model project of the Servicio. The panorama before them contrasts the verdancy of Aylambo with the rocky brown hills which surround it. At Aylambo, the community members are introduced to the fundamental image and symbol of the SESA development plan--the poncho verde (green poncho). The denuded, dry, cracked hillsides are likened to a sick person. In Sanchez's words: "Es que el hombre y la montaña presentan un proceso similar en el cual la montaña se parece al campesino, y hoy presenta un poncho que originalmente verde esta descolorido, raído y cubre muy poco sus entrañas, es decir estamos a la vista del esqueleto de los Andes." The aim of the project is to cover the exposed misery with a green poncho and feed it with rainwater captured by restoring the natural sponge of the vegetation and soil and by building a system of tubes for runoff. The water collection system assures that every excess drop can be stored in tanks, to be used for human consumption, animal consumption, irrigation, and clothes washing. The

collection tanks are also used to maintain a lagoon ecosystem. In time, the process of photosynthesis takes over as vegetation thickens and the area becomes increasingly fertile. This can only happen if the rain which falls in Cajamarca between late October and April is successfully captured to nourish the planted trees and ground cover. Thus resources are to be recuperated and regenerated in this system which, though relating to other systems, should be as autonomous as possible.

Located in the faldas (skirts) of the poncho are rural villages with small-scale industry and basic community services (rurbanización). Land use is ultimately envisioned to be 30 percent forest, 35 percent pasture, 10-15 percent agricultural (of which 2-1/2 percent will be orchards), and 20-25 percent "open" land. This land-use pattern may possibly involve redistribution of land and the complete involvement in artisan industry of individuals who possess neither salvageable nor currently arable land.

Development Committee. Upon acceptance of the Servicio, a Comité de Desarrollo (Development Committee) is organized for the community. At the committee's first meeting, the Servicio presents a list of the needs of the community. The first development projects are usually access roads, if none exist, and water works projects.

Informal instruction. During the first three-year period, informal, on-site training by the engineers of the Servicio begins. Community members benefit from the expertise of Servicio personnel, in relevant activity contexts. Information about, or demonstration of, building, planting, or irrigation is given only when the need or interest arises. Some referral information is also provided in other areas, such as health, for example. Such information, instruction, or guidance continues throughout the entire 18-year cycle, and becomes more intensive and structured during the intensive construction period (Phase I, Period 2) and the first stage of serious forest exploitation (Phase I, Period 3).

Year 2: Organization of the Development Committee

Composition of the Comité de Desarrollo (Development Committee). In Pariamarca, general assembly of the community selected the members of the Comité de Desarrollo. The Comité members (Table 2) represent local government, the Servicio Silvo Agropecuario, community committees, and geographic sectors of the community presently considered important.

The Development Committee, the Executive Comittee, and the Standing Subcommittees. The Development Committee elects its own officers, an Executive Committee, and eight permanent subcommittees. The present subcommittees are: Riego, Represas (irrigation and water storage), Vial (roads), Educativo (education), Pecuario (animal husbandry), Agrícola y Forestal (agriculture and forestry), and Salud (health). Two more subcommittees are yet to be created: Artesanía (artisan) and Comercialización (commercialization); and two additional subcommittees are to be added later in the planning cycle (Phase II, Period 2): Turismo (tourism) and Cultura (culture). Table 3 shows committees which

TABLE 2

MEMBERSHIP OF THE COMITÉ DE DESARROLLO (DEVELOPMENT COMMITTEE) IN PARIAMARCA (1979)

Group Represented	Members
1. Local Cajamarca government	• Three government-appointed subprefects. • Pariamarca's justice of the peace, a position appointed by the judge of Cajamarca. • Municipal agent, a position appointed by the mayor of Cajamarca. • Director of the school in Pariamarca, a position appointed by the Zona de Educacion. • Head of the medical post in Pariamarca, a position appointed by the Unidad de Salud.
2. Servicio Silvo Agropecuario	• Social worker (currently).
3. Permanent community committees and associations	• President of the Junta de Regantes (traditional Irrigation Council). • President of the Comité de Agua Potable (members include those who use potable water from spigots that date from development efforts that preceded the 18-year planning cycle). • President of the Comité de Deportes (Sports Committee). • President of the Asociación de Padres de Familia (Parents' Association). • Mayordomo de la Fiesta. • Conservadora de la Iglesia (this committee is like an altar society, its director is usually a woman).
4. Ad hoc community committees	• Presidents of all ad hoc community committees (committees which are formed for a special project and disbanded upon completion of the project). An ad hoc committee currently of great importance in Pariamarca is in charge of distributing the Food for Work allocations. The president of this committee considers himself to be head, or effective head, of the Executive Committee.
5. Geographic sectors	• Three representatives each from selected geographic areas (representation of the sectors depends on needs and interests of sector members; sectors currently represented are Agomarca, Amushulca, Cashapamba, La Chimba).

TABLE 3

SERVICIO SILVO AGROPECUARIO COMMITTEES EXTANT IN PARIAMARCA
JUNE 1979

Committee	Officer[a]	Sex
COMITÉ DE DESARROLLO (Development)	• President	
	• Vice president (currently head of medical post, also president of Subcomité de Salud [Health])	M
	• Treasurer (school teacher in Pariamarca, resident of Cajamarca)	F
	• Secretary (social worker of Servicio Silvo Agropecuario, resident of Cajamarca)	F
	• Assessor (member of Servicio, Pariamarquino, now resident of Cajamarca)	M
COMITÉ EJECUTIVO (Executive)	• (President thrown off the committee; effective head is currently president of Subcomité Vial [Roads] , Subcomité de Distribución de Alimentos [Distribution of Food for Work])	
	• Vice president	M
	• Secretary	F
	• Treasurer	
SUBCOMITÉ DESARROLLO EDUCATIVO (Education Development)	• President (director of school in Pariamarca, resident of Cajamarca)	M
	• Vice president	M
	• Secretary	F
SUBCOMITÉ DESARROLLO VIAL (Road Development)	• President (also president of Subcomité de Distribución de Alimentos [Distribution of Food for Work])	M
	• Vice president	M
	• Secretary	F
SUBCOMITÉ AGRÍCOLA Y FORESTAL (Agriculture and Forestry)	• President	M
	• Vice president	M
	• Secretary (school teacher in Pariamarca, also treasurer of Subcomité de Salud [Health] , resident of Cajamarca)	F
	• Treasurer (school teacher in Pariamarca, resident of Cajamarca)	F
SUBCOMITÉ DESARROLLO PECUARIO (Animal Husbandry)	• President	M
	• Vice president	M
	• Secretary	F
SUBCOMITÉ DE SALUD (Health)	• President (also vice president of Comité de Desarrollo [Development])	M
	• Vice president	M
	• Secretary	M
	• Treasurer (school teacher in Pariamarca, resident of Cajamarca, also secretary of Subcomité Agrícola y Forestal [Agriculture and Forestry])	F
SUBCOMITÉ AGUA POTABLE (Potable Water)	• President	M
	• Vice president (school teacher in Pariamarca, resident of Cajamarca)	F
	• Secretary	M
	• Treasurer (member of Servicio, Pariamarquino, now resident of Cajamarca, also assessor of Comité de Desarrollo [Development])	M
SUBCOMITÉ DE RIEGO, REPRESAS (Irrigation, Water Storage Tanks)	• President	M
	• Secretary	M
	• Treasurer	M
SUBCOMITÉ DISTRIBUCIÓN ALIMENTOS (Distribution of Food for Work)	• President[b] (also president of the Subcomité Desarrollo Vial [Roads])	M
	• Vice president	F[c]
	• Secretary	M

[a]All officers are residents of Pariamarca unless otherwise indicated.
[b]Collects the fee for trucking from each person.
[c]That the person is female needs verification.

currently exist in Pariamarca. Figure 7 diagrams the committee system in Pariamarca. (The Servicio is very prominent in directing and controlling development activities.) The present tambero (shopkeeper) claims to be a member of the Comité de Economía. According to the tambero, the president of that committee is also president of the Subcomité de Distribución de Alimentos (Distribution of Food for Work) as well as president of the Subcomité de Desarrollo Vial (Development of Roads). Members and officers of these committees are elected every two years, and can be re-elected. Servicio personnel are trying to get the Development Committee to stagger elections, so that only one-third of the members of each committee is elected at any one time.

Subcommittees and development projects. The standing subcommittees and their ad hoc committees direct all development projects in their jurisdiction. The Development Committee and other government agencies can offer direct aid to these committees in order to complete development work. The Subcomité de Distribución de Alimentos (Distribution of Food for Work) is in charge of distributing U.S. Title II assistance and other aid in the form of food, as compensation to workers on any community project.

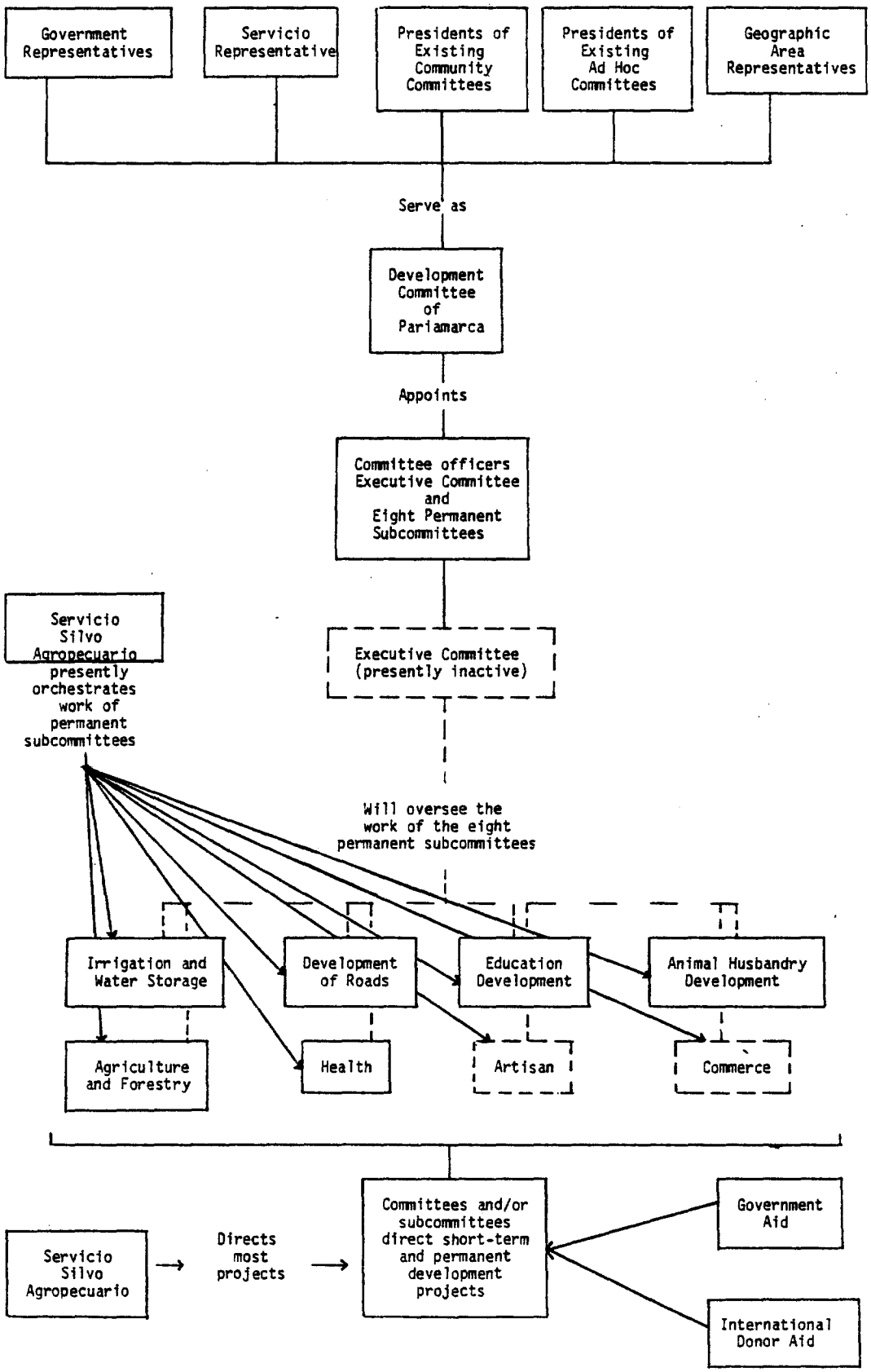
Year 3: Presentation of Work Plan and Initiation of Work

Work plan. The work plan is presented to the community by the Servicio personnel, and specific problems are worked out at that point. For example, if a road is to cross over the land of a person who is unwilling to give away his land, an effort is made to buy part of the land for the road. Necessary arrangements are made for land for community buildings. In the case of Pariamarca, for example, land for the forestry park, Parque de la Virgen, belonged to the Catholic church; part of this land was traded for land on which the school and the store are located, and on which the artisan workshop and school are under construction.

Initial development. Building a road is the primary task of initial territorial development. Machinery and people must have access to the area before further construction can take place. In the case of Pariamarca, irrigation canals had to be rerouted underneath the road by means of cement culverts; before this and other Servicio work, the road to Pariamarca was impassable during the rainy season. In addition to the road work, a storage room was built to provide a place for the secure storage of tools and materials.

Huerta escolar. The school garden contains vegetables, fruits, and flowers. Planting decisions are made by Servicio personnel who experiment both with what grows well and with what community members like to eat. An effort is made to include vegetables not eaten frequently in the community (e.g., beets, carrots, turnips, radishes, and onions) as well as those eaten frequently (e.g., lettuce and cabbage). Fruits grown in the garden include both native fruits (e.g., granadilla [passion fruit], berenjenas [eggplants], rocotos [spicy peppers], caputi, and poro poro) and foreign fruits (e.g., pears, apples, peaches, plums, and membrillos

Figure 7. System of committee organization in Pariamarca (partially theoretical and partially operational).



[a]Hatched lines denote theoretical relationships.

[quinces]). The school children, their teachers, and their fathers helped plant the garden.

One of the reasons for the garden is to encourage good future eating habits. Ing. Sánchez believes that children will learn to eat the vegetables that they grow in the garden and will then continue to eat these vegetables as adults. Produce which is not eaten by the school children is sold and the money is used to support goods and services provided by the Servicio.

In addition to the children's garden, plantings of flowers, both in public places and around individuals' homes and patios, will be encouraged--not only to make the community cheerful and attractive, but also because such increments in vegetation are seen as improving the ecosystem.

Phase I, Period 1, of the SESA plan has been accomplished in Pariamarca. What is planned for the remaining 15 years follows below.

Period 2: Intensive Construction (Years 4-6)

U.S. Title II food as well as food from other sources (e.g., food from other foreign aid programs, food from Peruvian government aid programs) will be used as compensation for those who work on construction and other community tasks. The majority of the workers are laborers who are presently building the artisan workshop and school. There are also security guards, one at the forestry park, Parque de la Virgen, and one at the core group of community buildings centered around the escuela azul (blue school). Other workers include two gardeners, one to tend the huerta escolar (school orchard and garden) and the flowers in front of the escuela azul and another to tend the flowers in the central plaza. Two carpenters are presently making desks for the new school, and a shopkeeper has been employed for the communal store. The number of workers will fluctuate according to the work that is being done, to the desire on the part of individual workers to work for food as compensation, and to the supplies of food available.

A worker's allotment of food has been calculated for a family of five. The men are paid with food every two weeks. The allocation of food that took place on June 9, 1979, included among the 30 men, 6 who received double rations for having more responsibility, having exercised more skill, or having worked longer hours. Workers receive all rations earned, but those who earn double rations must put the name of a relative on the list for the second ration; this is considered a necessary formality in order to receive the second ration, according to Title II regulations. The foot allotment included milk, corn meal fortified with soy flour, wheat four, cooking oil, and fish (canned mackerel). Because milk is no longer distributed under the Title II program, current supplies were either left over or came from some other source; the fish came from the Netherlands.

Most construction is done during the months of August, September and October--after the harvest and before the rainy season. Ing. Sánchez reported that as many as 150 food allotments would be available by August 1979.

Basic infrastructure. The basic infrastructure is built by Pariamarcan hands. This phase of construction prepares the groundwork for the heavier construction and large-scale projects of the future. Roads, footpaths, and bridges are improved or built; canals are cleaned; and irrigation and potable water projects are initiated. In some cases, open water tanks are built and are supplied with water carried from natural springs in the hillside to the tank via open tubes. If a tank is to be built on privately held land, it is built only by those who will use the tank. If such work takes less than two weeks to complete, the only compensation for the work is the tank itself, the benefit to the individuals is considered sufficient compensation for the workers' time. A terraced garden is built along with each water tank.

Projects Completed. A number of projects are completed during this period. Most of the tanks and reservoirs for potable water and a lagoon ecosystem are built. The lagoon is stocked with algae, minnows, and larger fish; other projects in the area are experimenting with the commercial breeding of fish.

For Pariamarca, the escuela azul (blue signifying a "gift from heaven") and the tambo are already completed. The tambero (shopkeeper) and his family live in two rooms of the store. The tambero, chosen by members of the community for a one-year term, may be reappointed. The Commerce Committee in Cajamarca arranges for the rice and sugar sold in the tambo, since both of these commodities are presently being rationed in Peru. Other products are currently stocked under the direction of the Ministry of Agriculture.

In Pariamarca, a taller (artisan workshop and school) is now being built. From construction of the building itself to the actual training and production programs, the taller is intended to present opportunities for instruction. The taller will begin simply, but will eventually evolve to a level of technological sophistication. Talleres at different sites will feature a variety of crafts, such as ceramics, brass making, and textiles, including all phases of silk production in areas which permit the raising of silk worms. The craft featured in Pariamarca will be tejidos (textiles): the program will include weaving, basketry, knitting, crocheting, embroidery, sewing, and ultimately the production of fine tapestries like those of Paracas.

Other projects include a comprehensive plan to build corrals and animal stalls for individual households. Presently animals wander freely, and the town is littered with dung. Containing the animals will serve several purposes, including hygiene and the possible use of the dung in composting or as fuel. A new posta médica will be built near the school. An albergue (hostel) will be used to house visitors, particularly those who may come from afar to work in the Centro de Animación. Currently, the rooms in the tambo serve this purpose; but in time, Ing. Sánchez envisions a rustic tourist inn, scheduled for completion during Phase 2, Period 3 of the planning cycle.

Maintenance. A system will be developed for maintaining the basic infrastructure and the construction projects completed during these periods.

Forest Planting. The planting of the forest will begin in earnest during this period. Already a number of trees have been planted in Pariamarca, a few of these are on the property of individuals, but most are in the Forestry Park and in the area around the escuela azul and the huerta escolar. Most trees will be planted during the rainy season. The Servicio intends to plant some stands of trees that will encompass the land of several different owners. Ing. Sánchez hopes that eventually people will forget which part of the land is theirs and that a communal forest will develop out of these stands.

Eventually, 30 percent of the community's land will be devoted to commercial forests. Pine, eucalyptus, cyprus, and casuarina trees are considered appropriate for the area; their maturation cycles also coincide with the timing of the 18-year planning cycle.

Agriculture and animal husbandry. The first agricultural and animal husbandry work will begin during this period. The use of high-yield seeds, the preparation of composts, the rotation of various crops, and the building of terraces will be taught during this period. The use of insecticides and chemical fertilizers will be avoided. Early animal husbandry technology will include instruction in the proper timing for shearing sheep and other wool-bearing animals, the improvement of animal fodders, and controlled breeding. The meadows, with barely 10 percent of their soils covered today, can be regenerated and improved during this period. The load of pasture lands can be raised from one sheep every ten hectares to three sheep per hectare.

Financing. Period 2 is the most expensive in terms of labor, materials, and personnel. The Servicio will seek extensive financial backing of the 18-year planning cycle, especially during this period. Outside financial assistance or credit or both will be required during the first six years of the plan. The highest costs will be those of construction (i.e., the road, school, artisan workshop and school, and community store); the lowest costs will be those of planting and managing the forests.

Period 3: First Resources Generated (Years 7-9)

Operation of main components of the plan. The escuela azul will be in full operation; ideally, its teachers will be residents of Pariamarca. Preschool children will have their own building and play area nearby. The tambo will be buying community members' products at a fixed price; profits on sales will be used for community purposes. The surplus from tambos in various communities will be collected and trucked to the market in Cajamarca. (The truck will be supplied by the Servicio.) The huerta escolar will be capable of supplying produce for school lunches; its surplus produce will be sold in the tambo or with other tambo surplus. Profits will be reinvested in the community. Training gained from work in the huerta escolar should be widespread throughout the community by this time, and should have resulted in other gardens and orchards in the community.

Infrastructure improvement. Potable water will be piped in to individual houses (at present, less than 20 families have potable water in their homes). Half of the homes in the communities will have baths and most will have septic tanks (neither exist at the present time in any individual home; indeed, in 1973, no home in any of the rural area surrounding the town of Cajamarca had a septic tank). Communication and services will also be improved as the Servicio truck begins to make regular trips to the city.

Establishment of forest management. After the first six years of growth, trees will be weeded and thinned. The trees removed from the forest in this fashion can then be used for firewood.

Initiation of intensive agricultural and animal husbandry programs. A seed bank will be established; borrowers will repay the bank with one-and-a-half times the amount of seed borrowed. Intensive training in composting will be given. Animal breeding patterns will be established, with criteria for the selection of appropriate breeding stock and optimal mating periods. Training will be given in the composition and establishment of the best combination of pasturage and animals. Training will also be given in the carrying capacity of pasturage, so that community members will be able to identify when animals should be shifted to new pasture land.

Rural village construction. Individual homes and village center buildings will be conveniently located near available water supplies.

Nonconventional energy projects. Ing. Sánchez is interested in experimenting with a wide range of energy technology, including solar ovens, windmills, and other nonconventional sources of energy production. The strong wind which blows throughout the afternoon in Pariamarca may make windmills, often regarded as an inefficient source of energy, potentially attractive in this locality.

Creation of a tourism infrastructure. A tourism infrastructure, consisting of an amalgam of rustic charm and modern convenience, will be created. Ing. Sánchez envisions a hostel with kerosene lamps and modern plumbing. Community members will help decide on the type of infrastructure and the amount of tourism that they feel is economically and socially acceptable.

Phase II: Momentum (Years 10-18)

Period 1: Availability of Firewood, Water, and Electricity (Years 10-12)

In Phase II, the "harvest" begins. The forests will yield firewood; the intensive agricultural and animal husbandry programs will produce higher crop yields and better quality, healthier animals. By this time, community members will be enjoying a more diversified vegetable diet and eating fish harvested from the lagoon. The most efficient use of the available water in the area will be realized, because of new distribution patterns and systems.

The use of modern technology will also become more evident during this period. A public telephone will be installed. The phone will permit greater communication with the "outside world"; thus, for the first time, information on area market conditions can be communicated to the village. The installation of electricity in individual homes will allow for such important advantages as literacy classes being held in the evenings and students being able to practice their reading at night. The increased level of technology will also affect artisan activities and product quality. More specialized artisan schools will be developed in response to the availability of appropriate technology. Studies will be made of the market and production costs.

Period 2: Refinement (Years 13-15)

Community members will continue to exploit the forest for firewood. In addition, there will be enough yield from the forests to provide posts, fences, and beams for use as part of the continuing improvement of land and homes and for industrial purposes (i.e., paper, construction), in an effort to balance the quality of handwork against the cost-effectiveness of machine use. Studies of markets, productions costs, and the maximization of both existing resources and those generated by the system will be elaborated. Studies regarding the use of wood for industrial purposes (e.g., the paper and construction industries) become especially important. Some communities will establish tourist centers concerned with meeting tourist needs, providing a market for artisan products, and stimulating the growth of the performing arts. Communication services, e.g., mail, transportation, will be intensified.

Period 3: Achievement of Development (Years 16-18)

During this period, major development objectives will be achieved. Manifestations of development will include the construction of factories and an infrastructure for the exploitation of wood and wood products, the establishment of hydraulic energy centers, and the further development of technology reached in the community.

Post 18-Year Planning Cycle

Work in the artisan and tourist industries is expected to take up the large slack periods between agricultural harvests and the exploitation of forests. Self-sufficiency will be achieved by the end of the 18-year planning cycle. The taller and the tambo will not only support themselves, but should provide profits for the community. The school will be maintained by the Ministry of Education. The communities' municipalities will support the community homes, the guardhouse of the Guardia Civil, the seed bank, and other communal undertakings.

Three types of centers are included within the development plan. Pariamarca is typical of the first type, which will meet all of the criteria listed above. The second type of center includes small locales like Amushulca, which will have a tambo. The third type of center will

have only a communal building which will serve as the center of activities and the site of potable water. Potentially, second- or third-class centers could become first-class centers. Also, services such as mail and public transportation will be increased in the larger population centers.

PART III. PARIAMARCA: THE FIELD STUDY

EDUCATION

Most families in Pariamarca value education as an escape from poverty. Poverty itself, however, presents barriers to the attainment of formal education. The cost of clothing, books, and school supplies places a financial pressure on poor families. In Pariamarca, parents must pay an annual school maintenance fee, whether or not their children attend school. Getting to school is often difficult for students who go on to secondary school. Sometimes the family relocates, but more often the student moves to Cajamarca or endures four hours of walking a day.

There is a discrepancy between the demands of rural life and the training a Pariamarcan student recieves. Students are educated by western, urban standards. Although there are opportunities in Peru for the educated, there are none in Pariamarca; therefore, secondary school graduates leave the community.

Linguistic barriers do not affect the educational process in the Spanish-speaking community of Pariamarca. However, cultural barriers between teachers and families are present, although they are not as great as they are in Indian communities. Teachers in Pariamarca are usually mestizos, the native Indian-European ethnic culture. The students' families, though of the same ethnic mix, are cholos, country people, and thus in a different social class than the teachers. All of the teachers reside outside of Pariamarca (in Cajamarca), and only one is originally a Pariamarquino. The average number of years taught in the community by the four primary school teachers interviewed was 9.5 years; such continuity facilitates a certain familiarity with and knowledge of the community.

Pariamarca has a kindergarten (as of April 1979) and an elementary school with six grades. For four years, all classes have been coeducational. The nine teachers include three men and six women; there is one teacher for the kindergarten, one for each grade, a practice teacher, and a school director (male). The school year runs from April through December. The U.S. Public Law 480 program, Plan de Alimentación Escolar (Student Food Program) was initiated in August 1968.

Two years ago, the school director, who is president of the Subcomité Educativo (education subcommittee), requested a kindergarten for Pariamarca. A prominent community leader, Segundo Rufino Alvarez, expressed great support for the kindergarten; he sees the kindergarten as a very happy place where the children are being well prepared for elementary school. Children may enter kindergarten at age three and remain until they enter elementary school at age six. It will be particularly interesting to see what effect kindergarten has on the self-image of girls and their passage through primary school. Girls in this culture are shy and have had little group experience of any kind. Kindergarten attendance may make a striking difference in their later school performance and adjustment. The data in Table 4 suggest either that girls are repeating grades or that they are enrolling at increasingly earlier ages.

Schooling became mandatory in Pariamarca approximately 10 years ago. Sr. Alvarez reports that, now that the school is coeducational, the same

Table 4

AGE DISTRIBUTION OF PARIAMARCAN GIRLS BY GRADE IN ELEMENTARY SCHOOL[a]
(1978)

Grade	Age												
	6	7	8	9	10	11	12	13	14	15	16	No Information	Total
1	7 (0.21)	16 (0.68)	5 (0.83)	-	-	-	1 (0.86)					5 (1.01)	34
2			5 (0.28)	6 (0.61)	5 (0.89)	2 (1.00)							18
3			1 (0.07)	2 (0.21)	7 (0.71)	3 (0.92)	-	-	1 (0.99)				14
4			1 (0.07)	2 (0.20)	6 (0.60)	2 (0.73)	3 (0.93)	1 (1.00)					15
5					3 (0.21)	5 (0.57)	3 (0.78)	3 (0.99)					14
6						3 (0.17)	2 (0.28)	5 (0.56)	6 (0.89)	1 (0.95)	1 (1.01)		18
TOTAL													113

[a]Cumulative percentages of rows are in parentheses.

Source: Oscar Muñoz Miranda, staff member of Programming Office, Educational Zone 82, Cajamarca, Peru.

number of boys and girls go to school, more women are attending secondary school, and more women than men are participating in the adult education program (only an occasional man attends the literacy classes of the Mothers' Club in Pariamarca). Sr. Alvarez longs for a secondary school in Pariamarca, with adult education available in the evening.

There is a rural lending library at the medical post. The male nurse at the post is in charge of the library, but it is not clear whether there has been any borrowing to date. The nurse hopes that women taking the literacy classes will use the books.

Women and Schooling

Many women in Peru are illiterate--according to the 1972 Census, close to 70 percent. Furthermore, the percentage of illiteracy has increased since 1940. Just over 30 percent of Peruvian men are illiterate, according to the 1972 Census, but this percentage has decreased since 1940 (CEPD, 1979).

A comparison of these figures with those for rural Peru and rural areas in the Department of Cajamarca in 1972 as well as those from SESA's 1978 survey (see Figure 8) shows that a very high percentage of women in rural Peru never finish primary school. Figure 8 shows, however, that the percentage of women in the population age cohort, 12-19 who have attended primary school is greater than the percentage of those who have not. For older women, the opposite is true. (The shaded areas of each bar for women, ages 12-19, are greater than the blank areas, whereas, for women 20 and over, the opposite is true.)

Data from the 1972 Census of Greater Pariamarca show a dramatic change occurring in women's educational levels in Pariamarca (see Figure 9). A larger percentage of women under 20 years of age, and especially those under 15 years of age, are finishing primary school. The survey that SESA took of the Pariamarca area in 1978 showed that all women between the ages of 12 and 14 have attended school. As this trend toward an educational system that produces literate women continues it will soon become apparent whether the community will be able to absorb these women by providing responsible and attractive positions for women in the community.

Though the attained level of education is low for both sexes, men in Pariamarca receive more schooling than women. Of the Battelle sample of women, 46.1 percent had never attended school as children. More than 86 percent of this sample either had never attended school at all or had not completed primary school. A few of the women who had completed one or two years of primary school said that they could only read a little. Only one woman (age 19 and unmarried) had completed secondary school; she was continuing her studies. In contrast, only 4.9 percent of the husbands of the respondents had never attended school, and just over half either had never attended school or had not completed primary school. Close to 15 percent of the husbands of the respondents had completed secondary school or had attended school beyond the secondary level.

The sample's distribution by achieved level of education is shown in Table 5 and Figure 10.

Figure 8. Schooling of women in rural Peru

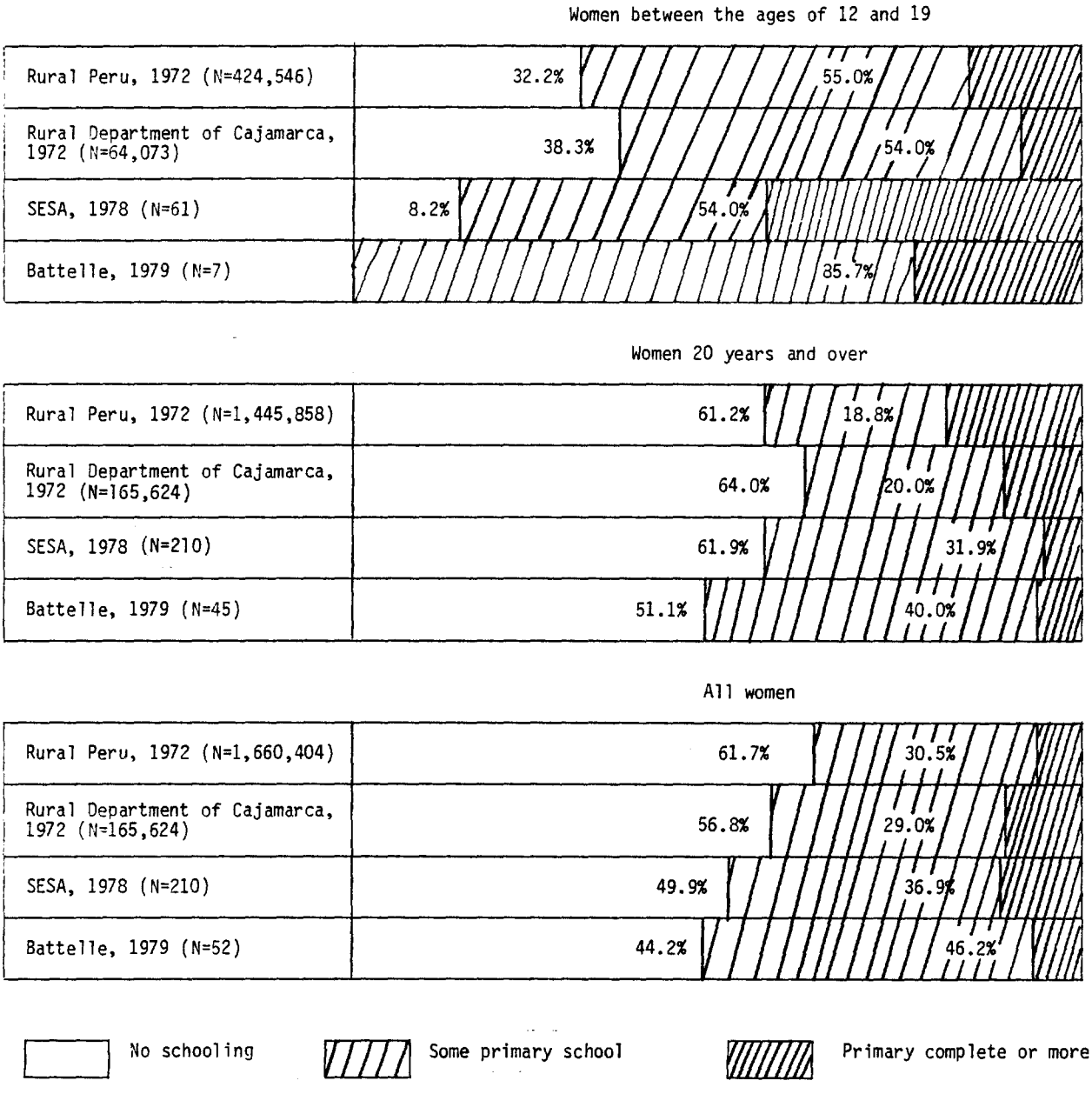


Figure 9. Completed schooling of women in Greater Pariamarca, 1972: less than completed primary vs. primary completed and beyond (N=912).

Source: 1972 Census data from Pariamarca Pueblo, Pariamarca Caserío, Cashapampa, Chimba, Agomarca, Amuschulca, Paccha, Paccha Chica, and Paccha Grande.

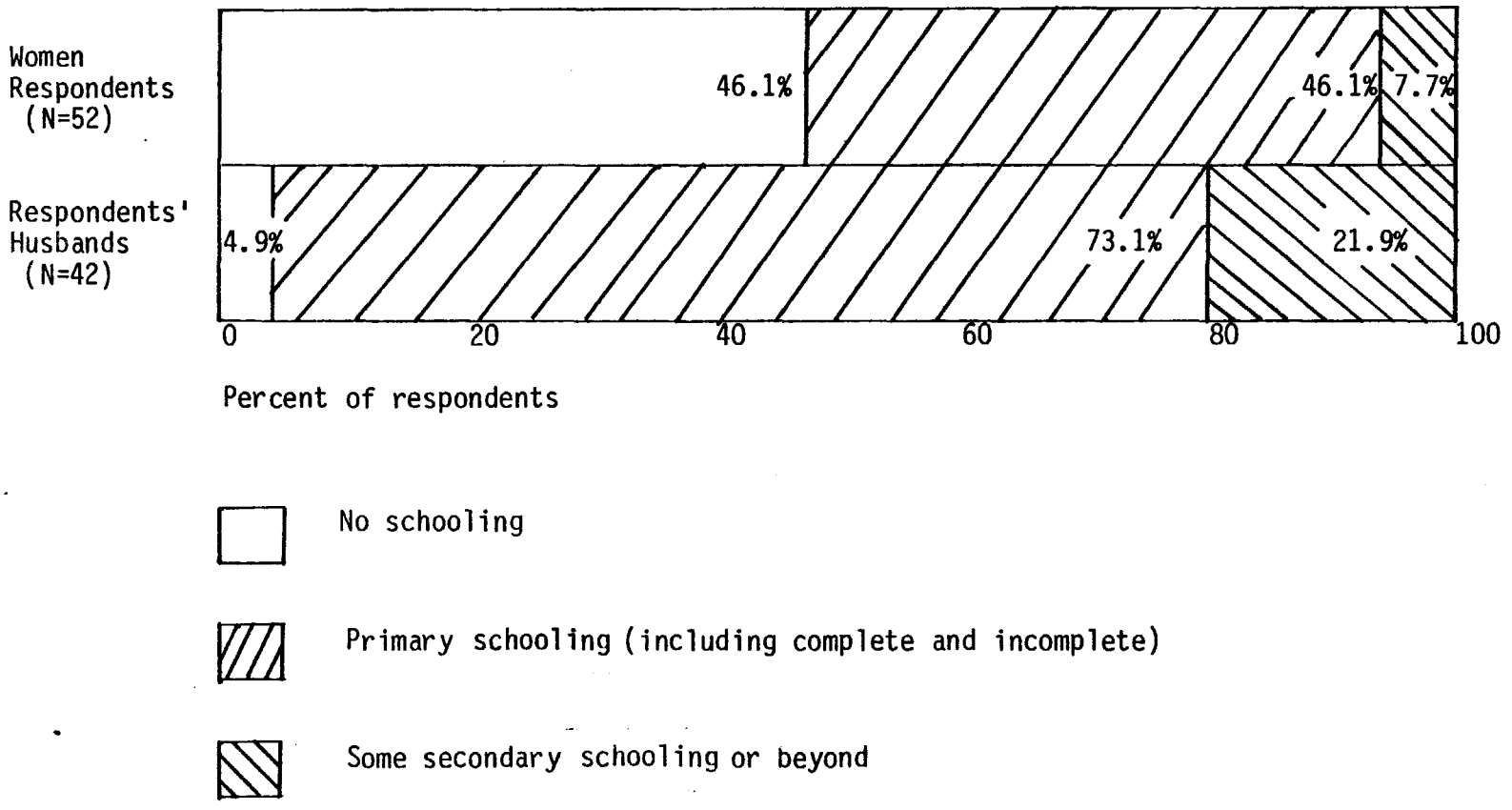
TABLE 5

SAMPLE DISTRIBUTION BY SEX OF ACHIEVED LEVEL OF SCHOOLING
(PARIAMARCA, 1979)

Education	Women[b]			Men[c]		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
None	24	46.1	46.1	2	4.9	4.9
Did not complete primary school	21	40.3	86.4	19	46.3	51.2
Completed primary school	3	5.8	92.2	11	26.8	78.0
Did not complete secondary school	3	5.8	98.0	3	7.3	85.3
Completed secondary school	0	0.0	98.0	5	12.2	97.5
Higher education	1	1.9	99.9	1	2.4	99.9
TOTALS	52			41		

[a]Women's reports.
[b]Respondents.
[c]Husbands of respondents.

Figure 10. Sample distribution by sex of achieved level of schooling (Pariamarca, 1979).[a]



[a]Women's reports.

The educational discrepancy between women and men persists beyond attained level of schooling to desired level of schooling. (Table 6 and Figure 11). Although most women aspire to no more than a primary school education, they believe that men should complete secondary school. Yet, almost every respondent answered with an unqualified "yes" when asked if she thought it was important for women to go to school. The most frequent reason given was to learn to read; the reason cited next most often was to manage transactions related to commerce (i.e., to learn to better make calculations).

In Pariamarca, the teachers' views of educational opportunity differ from those reported by the Pariamarcan women (Table 7). All the teachers profess that both sexes should receive the same education, they also recognize that what is attainable is tempered by reality; in Pariamarca, this reality is much more likely to constrain female than male educational achievement. Thus, although the teachers indicate that they approach boys and girls similarly, they describe some advantages for boys.

About four or five years ago the male nurse at the posta médica contributed to the formation of a Mothers' Club. The springboard for the formation of the club was a regular gathering of women who were participating in the mother-infant feeding program, now the club includes women without young children. Three mornings a week, the Mothers' Club meets; two of these mornings, the women attend literacy classes held at the medical post; the other morning the women listen to talks by Catholic nurses and the head of the medical post. When the Battelle field investigator was in the community, a Peruvian sociologist came from the Universidad Nacional Técnia de Cajamarca; she and her European husband did the teaching. Other visitors have also come to teach.

The Servicio and Education

Education, especially of children, is seen as a focus of the 18-year planning cycle. "Planning-cycle babies" will grow up knowing about the SESA Plan and its development technology. Adults too will be educated in matters of SESA technology; they will also learn skills in the talleres (workshops). While adults may come to accept technological and other changes stemming from development activities, the children who grow up within this development environment will incorporate these changes as an integral part of their lives. For example, the children participate in the planting of huerta escolar. The children also learn a great deal about the work of the Servicio from the teachers. The positive attitude that both teachers and community leaders have toward the plan further integrates the plan into the children's lives (see Table 8). As proof of the salience of the plan, or at least of its leader, the primary school children in Pariamarca voted Ing. Pablo Sánchez "Man of the Year" in June 1979.

In Pariamarca, the physical location of the school reflects the plan's focus on education. The escuela azul occupies a central location in the town center, close to the communal store, artisan and carpentry workshops, and the medical post. The school is close to the activities

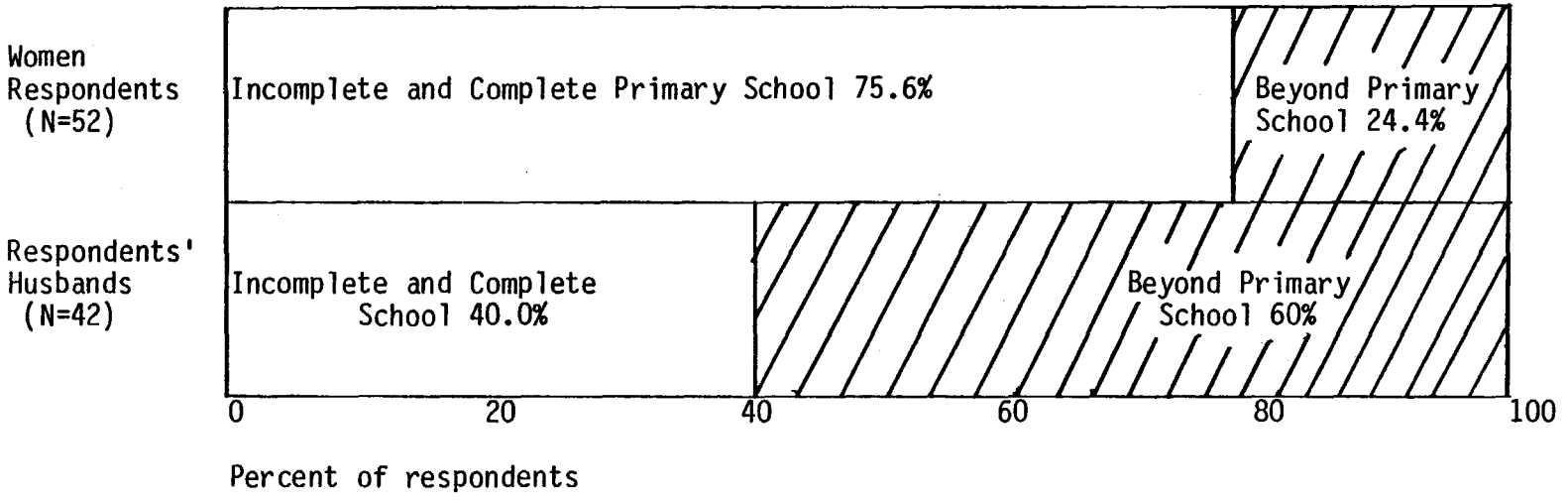
TABLE 6

SAMPLE DISTRIBUTION BY SEX OF DESIRED LEVEL OF SCHOOLING
(PARIAMARCA, 1979)[a]

Education	Women[b]			Men[c]		
	Number	Percent	Cumulative Percent	Number	Percent	Cumulative Percent
None	0	0.0	0.0	0	0.0	0.0
Attend primary school	5	11.1	11.1	2	5.7	5.7
Complete primary school	29	64.5	75.6	12	34.3	40.0
Attend secondary school	2	4.4	80.0	1	2.8	42.8
Complete secondary school	7	15.6	95.6	17	48.6	91.4
Receive higher education	2	4.4	100.0	3	8.6	100.0
TOTALS	45			35		

[a]Women's reports.
[b]Respondents.
[c]Husbands of respondents.

Figure 11. Distribution by sex of desired level of schooling (Pariamarca, 1979).[a]



[a]Women's reports.

TABLE 7

TEACHERS' VIEWS OF EDUCATIONAL OPPORTUNITIES IN PARIAMARCA
(1979)

Teachers	Years Teaching in Pariamarca	Years Teaching	Sex, Age, and Marital Status	Class Enrollment	Aspired School Attainment	Comments	Aspired School Attainment: Pariamarca	Comments	Teaching Males Versus Teaching Females
Kindergarten	1st Year	3	F 27 married	18 boys 14 girls (in regular attendance: 8 boys 6 girls)	Ideal: at least secondary, if staying in community; professional and follow careers, if leaving community	To understand better and to solve problems	Complete primary	Children valued for household work; traditional roles for females preferred (e.g., herding, animal care)	Same importance; both sexes carry out the same work here; women till the earth too (respondent described the equivalent abilities of both in terms of the work they do)
3rd grade teacher (Pariamarquino)	13	15	M 38 married	20 boys 16 girls	Superior school, university	To be professionals	Both sexes: secondary (vocational); female: at least 3 or 4 years of secondary; male: complete secondary	Both sexes: need something practical Female: to be prepared to be a mother	Equal in the basic curriculum: math, language, social history; in sexology, it makes a difference because of the different rates of development
5th grade	4	18	F 44 married	23 boys 12 girls	Until becoming professionals	To produce good professional engineers	Complete primary	The children in the city are more awake; here they are timid and ashamed; there is TV in the city	Part of the curriculum is tasks, and this differs by sex: girls do fine work (e.g., weaving, embroidery); boys make baskets, do agricultural work, and herd with their fathers; in the orchard, the work of both sexes is equal; reading and math are equal

TABLE 7

TEACHERS' VIEWS OF EDUCATIONAL OPPORTUNITIES IN PARIAMARCA
(1979)
(continued)

Teachers	Years Teaching in Pariamarca	Years Teaching	Sex, Age, and Marital Status	Class Enrollment	Aspired School Attainment	Comments	Aspired School Attainment: Pariamarca	Comments	Teaching Males Versus Teaching Females
6th grade	9	9	F 29 single	24 boys 12 girls	Education is continuous	There is no period for it; every day we are learning	Same as under Ideal	Need more dedication to the education of the children here because of illiteracy and the disadvantages--they are somewhat abandoned	Boys have a little more interest; unequal in enrollment, with many more boys; girls expected to cook and care for the house; they marry young and have children; little girls are taken out in second grade; the girls who are in her 6th grade class are the privileged ones.
Director	12	16	M 38 married	Has had no class for the past two years	Cites highest current achievement of girls in Pariamarca: one in normal school, one in superior school		Vocational training often doesn't continue after primary school	Parents think women should stay in the house and care for the animals; basic math and language essential to handle own affairs	Classes are now coeducational. It's hard to work with both sexes at once; the problem is health; those who are of good health learn better. Boys in healthy condition always learn a little better than girls.

TABLE 8

TEACHERS AND THE SERVICIO IN PARIAMARCA
(1979)

Teachers	Discussion of the Servicio in the Classroom	Impact of the Servicio on Women	Teachers' Attitudes Toward the Servicio	Teachers' View of the Most Difficult Problem Faced by Planners
1	Yes. Tries to integrate it frequently into all that she teaches, by discussing the relationship of the Servicio to the nature of the community, and how the Servicio will benefit the land. Uses Servicio posters showing current situation and planned improvements.	Positive for those whose husbands are in the Food for Work program, because the women are happy about getting the food.	Positive: technical aid, interest, capacity to work, and security. The Servicio has been very valuable in helping these forgotten pueblos develop. It will improve the quality of life and is awakening interest in overcoming problems. Because of the work of the Servicio, tourists and the people from Cajamarca are saying that this village is progressing.	Inequitability and dependence on Food for Work program. "Those who do not get the food are sad; but food is a good incentive for work, and it would be very hard to get the work done without offering anything."
2	Yes, but little.	Not aware of any, but not familiar with what is happening. "I come for moments to Pariamarca, maybe they have had an impact I do not know about."	Critical: distribution of personnel, involvement of the people. "The Servicio has employees of all classes; they could distribute them better: 3 or 4 people come at once; they work in Pariamarca only because they want to work close to the city. But they are doing something." "When the Servicio came, the children made the holes, and planted trees. Now the adults have taken over."	Water. If it does not rain, there will be no crops; the people need irrigation; rivers must be rerouted.

TABLE 8

TEACHERS AND THE SERVICIO IN PARIAMARCA
(1979)
(Continued)

Teachers	Discussion of the Servicio in the Classroom	Impact of the Servicio on Women	Teachers' Attitudes Toward the Servicio	Teachers' View of the Most Difficult Problem Faced by Planners
3	Yes. Discusses the progress of the community since the Servicio has come.	Cannot specify.	Positive: technical aid, food, work. "The Servicio gives people food for their work." Has completed various projects: the tanks, potable water, the school garden; technical direction in agriculture for adults and children (the children have transplanted the plants), combating plagues, building better roads.	No problems. People here like to collaborate, and they are doing it it. "But I do not know the community well. Others can tell you more."
4	Yes. Sometimes comments about the great support being given to the community.	Positive. Impact has been to awaken the enthusiasm of men and women. Servicio work has shown that women are useful in fields of work previously thought to be only for men (e.g., making clay, adobe). Useful for the new evaluation of women. "They are not only objects; they can speak and participate in activities. Some women are secretaries or treasurers on comités; none has been president yet, but perhaps soon."	Positive: general benefit and technical direction. The Servicio is an important organization of great benefit to the peasant communities. It has given technical direction and shown the importance of work.	Lack of money. "There is lots of manual labor, and people are ready to work and collaborate."

TABLE 8

TEACHERS AND THE SERVICIO IN PARIAMARCA
(1979)
(continued)

Teachers	Discussion of the Servicio in the Classroom	Impact of the Servicio on Women	Teachers' Attitudes Toward the Servicio	Teachers' View of the Most Difficult Problem Faced by Planners
5	Yes. Encourages children to help in the community effort as part of the teacher's orientation toward the development of the children. Speaks to them about the work of the Servicio program: the Servicio is helping the community with education and agriculture; the communal store enables people to buy food, including rice; water tanks are built; plant diseases are controlled; the taller is being build and will provide a place and skilled workers to repair the school furniture. In summary, the integrated development of the community is desirable and is discussed in class.	Potentially. The Servicio does not yet have women as a specific theme. Nonetheless, they have projected the installation of the taller de tejidos so that women will be able to perfect their work. "Maybe the Servicio social worker gives talks to the women; I do not know."	Positive: community involvement and achievement. The Servicio promotes participation and is accomplishing a number of tasks. Its work in the community should continue to be supported.	Dealing with community members. Getting the people to participate and work to complete things. Also stealing (e.g., the posters); there is a lack of security here.

that are crucial to the economic and physical well-being of the community. Currently, the twelve-room escuela azul houses only the kindergarten class. By April 1980, the school will also contain the primary school (grades 1-6). For the time being, the school serves as living quarters for the family of the school's caretaker, who also watches over the nearby huerta escolar, a public bathroom, and a public water tap. Other rooms are temporarily used for the carpentry workshop, the distribution center for the Food for Work program, and a recreation room for young people who go there for music after the weekly (in season) Sunday soccer matches.

Though currently all of the regular teachers in the primary school, including the kindergarten teacher and the director of the school, live in the town of Cajamarca, the teachers eventually (Phase I: Period 2, in the sixth year) are to live in Pariamarca and participate in the life of the community. A number of the teachers are officers of community committees (see Table 3, above). By serving as models of educated people who know and understand the community and have chosen to live there, the teachers might encourage other community members to remain in Pariamarca.

Ing. Sánchez believes that no degrees should be given in the school in Pariamarca. He sees the purpose of education as one of providing a means of self-support within the community, and he believes that granting a degree will mean certain exodus from the community. Almost half of the 145 heads of Pariamarcan families surveyed by Servicio personnel in 1978 aspired to a completed primary (41) or secondary (35) education for their children.

WORK

The woman of Pariamarca is in charge of the home, the gardens, and the young children; her life is very busy, and she depends on her daughters to help her. She prepares meals, including grinding the grain; washes the clothes; sweeps the house; raises and cares for the guinea pigs, hens, and pigs; pastures the sheep; gets firewood; mends; and spins wool yarn by hand. With the yarn she spins, she knits garments for her children. Some women dye their own yarn. The woman usually makes her own blouses and underwear, although manufactured clothing is becoming more readily available. The Pariamarquina also participates in the work of the chacra (fields), planting seeds, weeding, and harvesting. According to Hafer (1971), she also usually manages the family's money.

The Pariamarquina is very conscious of her responsibilities and ready to take advantage of opportunities to fulfill them. This was well-illustrated one afternoon when a woman and her three-year-old son returned home from the Sunday soccer match. Allowing the field investigator to carry the chickens which the woman had just purchased, the Pariamarquina used her freed hands to collect firewood on the way up the long hill to her home. She collected penca (cactus leaves), carefully picking up only the dry ones, leaving those which she deemed too green, too heavy to carry, and not yet ready to burn. She muttered that others do not leave them to dry. Further up the hill on the edge of a field, in a small heap of withered leaves, she salvaged 27 lentil seeds that she intended to

plant. About a third of a mile from her home, she shifted the tether stakes of two sheep. She arrived home, ready to tend to her chickens and prepare her family's evening meal, a task that required the grinding of grain with a mortar and pestle in addition to the cooking of the meal itself.

The woman perceives her role as one of being at home and raising her children. When asked what other work women could do, she describes other kinds of domestic work. Only unmarried women ever work outside of Pariamarca, even in this capacity. Small scale buying and selling and involvement in tejidos (textiles) fall within this "domestic" realm. For example, the most exotic possibility of "some other task" mentioned by the Pariamarquinas was to learn to sew by machine.

The distribution of respondents by work status is shown in Table 9. Fewer than half of the women reported that they receive any income, and most of those who earn money do so by selling eggs, small animals, and agricultural products. Some earn income on a weekly basis, but most reported that they earn it "from time to time." When asked what they buy with the money that they earn, they almost invariably replied "food," with clothes specified next most often. In general, they commented that the money is to maintain their children, to provide for the daily existence of their families, and to buy basic necessities. None of the women ever mentioned that they turned the money over to their husbands.

The Servicio and Work

There is no way to earn a salary in Pariamarca. Currently, the Servicio provides food as remuneration for the labor of some of the men in the community (e.g., 30 men received food for the two-week period ending June 9, 1979). The Servicio provides regular monetary remuneration for two people, the shopkeeper and the president of the Subcomité de Distribución de Alimentos (Food for Work Distribution Program); the latter not only works directly on community projects, but oversees the work force and distribution records. Theoretically, more than one family member can work for food; however, the actual ground rules permit only one family member to work. By August 1979, according to Ing. Sánchez, there should be supplies sufficient for 150 workers.

According to Segundo Rufino Alvarez, the women do not work on the committees, nor do they want to: they have too many other things to do. At one time, during the construction of the access road to Pariamarca, a woman prepared lunch for the workers, but the men did not want to eat food that their wives had not cooked and, furthermore, they noted that the woman's pig was growing suspiciously fat. Now the men go to their homes for lunch on working days.

The goal of the taller, presently under construction, is to provide work in Pariamarca for Pariamarquinos, and thus to stem migration. This artisan textile workshop will include weaving, basketry, and all types of textile handiwork; the ultimate goal will be the production of fine tapestries, like those of Paracas. Eventually, a separate artisan workshop will be built for carpentry. Who will work in the taller, and how

TABLE 9

DISTRIBUTION OF RESPONDENTS BY WORK STATUS
(PARIAMARCA, 1979)

Work Status	Number		Percent		
SOME INCOME	20		.41		
Vendors		15		.31	
Tejidos		4		.08	
Makes thread					.04
Knits					.02
Makes barley sacks					.02
Agricultural labor (seasonal)		1[a]		.02	
NO INCOME	29		.59		
In school		1		.02	
TOTAL	49		1.00		

[a]Only woman who earns wages.

much time they will work, has not as yet been determined. There will be, however, some full-time artisans; these full-time workers will include people whose land is now extremely unproductive. Others will work only during the slack periods of the agricultural cycle.

Unlike the other talleres currently operated by the Servicio, the taller planned for Pariamarca will include women. After all, it is they who practice many of the tejidos skills at the present time. Although the women generally make their own yarn and knit garments, about five or six in the entire area, few do any loom weaving. In Greater Pariamarca, the blankets and ponchos are made by men; thus, a potential imbalance of the sexes in the taller does exist. If no women are chosen as apprentices and if loom weaving is emphasized in the taller, women are much less likely to be involved in the taller,

even in the future. In any case, the young, single, or newly married people will be the focus of training, whether they are male or female. The Servicio will provide fellowships to support two pairs of artisans (sexes not yet determined) for a training and apprenticeship period of from six months to a year. Each of the two pairs of artisans will travel to a different location noted for its skill in weaving.

The work of the Servicio will improve agricultural and livestock production within the next six years. The ecological restoration and the Servicio Silvo Agropecuario technology, along with the seed bank, will also improve agricultural and livestock production within the next six years. The tambo is expected to play a great role in enhancing the benefits that the community can derive from such improved production. The tambo will buy produce, sell it at fixed prices, and organize the marketing of surplus. Thus, the tambo will improve the individual worker's cash flow and generate profits that can be used to fund community projects.

MARRIAGE AND FAMILY

Marriage in Pariamarca is informal, and two successive unions were the common pattern. Although the desired age at first marriage is 20.6 (N=8), the average age of women at first marriage is actually 18.0 (N=34). Of those women in the sample who were currently married, over 83 percent (N=43) were convivientes (living in consensual union). The adult woman who remains unmarried is rare. (See Table 10 for distribution of respondents by marital status.)

TABLE 10

DISTRIBUTION OF RESPONDENTS BY MARITAL STATUS
(PARIAMARCA, 1979)

Marital Status	Number	Percent
Single	5	9.6
Married	7	13.5
Consensual Union	36	69.2
Separated/Widowed	4	7.7
TOTALS	52	100.0

TABLE 11

FERTILITY AND MORTALITY OF WOMEN IN UNION OR EVER IN UNION

Cohort	Total Women	Battelle Sample: Fertility (1979)				WFS: Fertility (1977-78)	Battelle Sample: Mortality (1979)				Battelle Sample: Living Children (1979)			
		Male	Female	Total	Average Total	Average Total	Male	Female	Total	Average Total	Male	Female	Total	Average Total
15-19	2	1	1	2	1.00	1.04	0	0	0	0.00	1	1	2	1.00
20-24	10	10	4	14	1.40	2.00	2	0	2	0.20	8	4	12	1.20
25-29	7	7	11	18	2.57	3.24	4	1	5	0.71	3	10	13	1.86
30-34	9	11	25	36	4.00	4.49	0	7	7	0.78	11	18	29	3.22
35-39	7	22	29	51	7.28	5.88	9	8	17	2.43	13	21	34	4.86
40-44	7	30	22	52	7.42	6.58	14	9	23	3.29	16	13	29	4.14
45-49	5	26	23	49	9.80	6.99	15	9	24	4.80	11	14	25	5.00
TOTAL	47	107	115	222	4.78	4.32	44	34	78	1.65	63	81	144	3.06

Forty-seven percent of the women over 24 and presently involved in a union had been involved in a union previously. A few of these women had been widowed, but most had been left by their spouses. In general, the rate of remarriage is high and succeeding unions usually stable, although there is some evidence that children of first unions are not well-accepted by succeeding husbands. Of the four women in the sample who were currently separated or widowed, one was 26, and the spouse she had lost was her second.

The average age of women at first parturition is 20.6 years (N=40). Most women give birth in their own homes, often with the help of a curiosa (folk practitioner),[6] sometimes with the help of their mothers, and less frequently with licensed midwives in attendance. The women are very embarrassed about going into town to the hospital in Cajamarca and would, in addition, find it very difficult to get there.

Fertility rates of the Pariamarca sample were much like those for Peru in general. Though the numbers in the cohorts are small, the average family size (8.0) of women 35 or over (N=19) is greater than that of the completed family size (7.3) in the Department of Cajamarca. The 1972 Census of Greater Pariamarca indicated a dramatically high median mortality of offspring for all women, whether in union or not (see Figure 12 above). As many children have died as have survived of those born to women between the ages of 30 and 39. More than half of the children born to women age 40 or over have died. Because we do not know the age at death of these offspring, we cannot know whether child mortality is higher in the older age cohorts, i.e., for mothers 50 years or older.

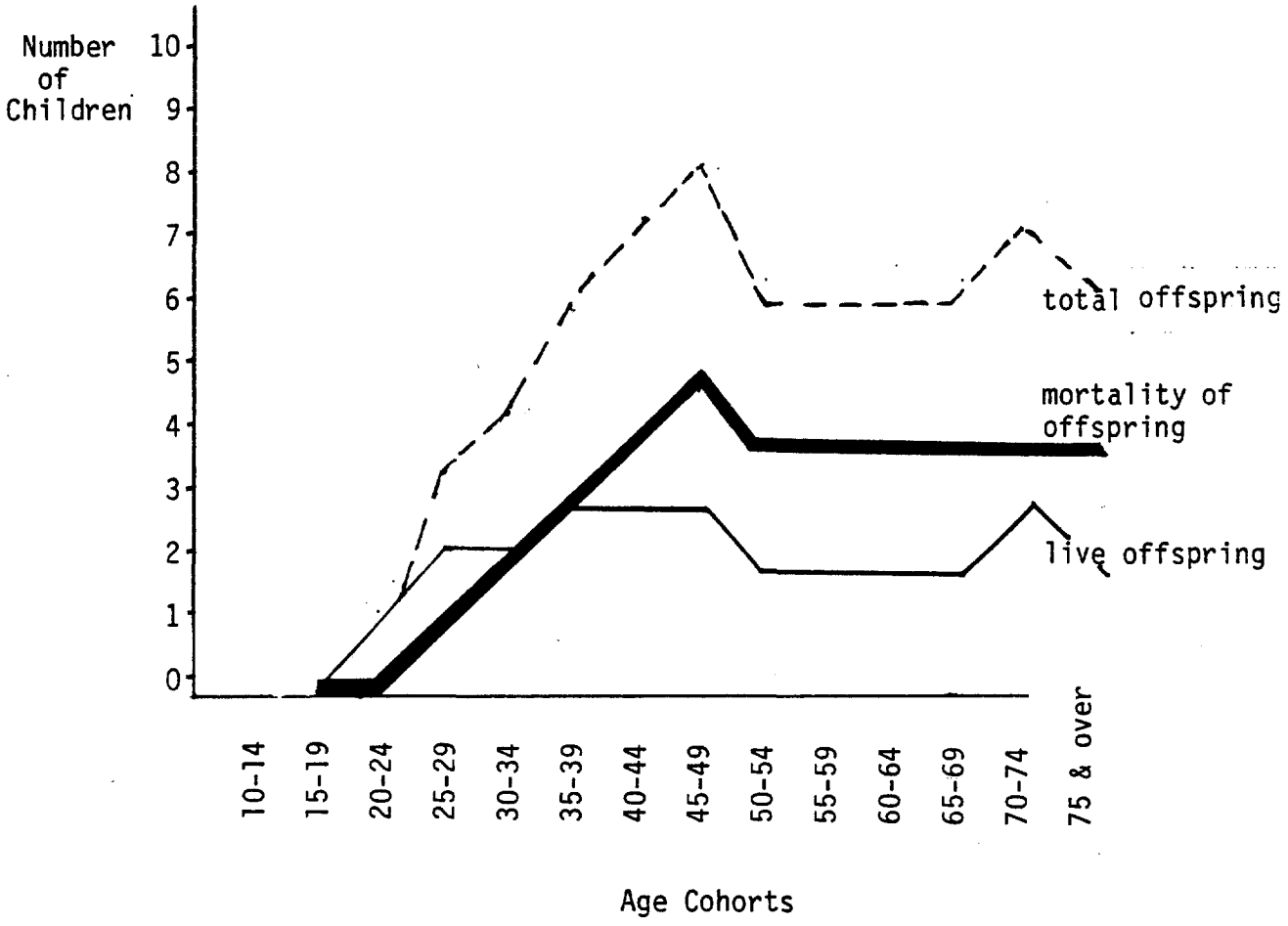
When all women (N=48), regardless of marital status, were asked what they considered to be a large family, they gave a mean of 10.9 children as their response; their response (N=50) for what they considered to be a small family was a mean of 3.8 children. Notably, the mean desired family size was 3.6 children (N=40), less than the mean given for what they considered to be a small family. On a case-by-case basis, 72.5 percent of the women (N=40) desired a smaller-sized family than that which they as individuals considered would constitute a small family. Evidence from a number of spontaneous comments by respondents indicated that those women who actually had small families had them because they were young and had many childbearing years remaining in their life cycle or because of the extremely high infant and child mortality (see Table 11 above and Table 12).

Of the 222 children born to the study sample (N=47), 78 (35 percent) have died. This figure is eight times the infant mortality rate (44 per 1,000) for all of Peru.[7] Most child mortality occurs before the age of two years; mortality in youth after five years of age is rare.

The women of Pariamarca want to limit their family size. Of the married women, 67 percent wish to have no more children. Of those who do wish to have more children, 50 percent are between the ages of 20 and 24, the prime childbearing years; but the mean number of living children of all women wishing to continue childbearing is 1.5, well below the mean desired family size of 3.6 (N=40).

When a woman reports wanting to have no more children, she is then likely to discuss with her husband how many children they ought to have. Communication serves not for planning, but for prevention after one has reached one's limit, or perhaps gone beyond it. Essentially, a woman

Figure 12. Median Mortality of offspring and family size for women of Greater Pariamarca in 1972 (N=1110).



Source: 1972 Census data from Pariamarca Pueblo, Pariamarca Caserío, Cashapampa, Chimba, Agomarca, Amshulca, Paccha, Paccha Chica, and Paccha Grande.

a Note the difference in family size between the 45-49 age cohort and older age cohorts. Data show that there has been in increase in completed family size or, more probably, women with smaller families outlive their more fertile sisters.

TABLE 12

MORTALITY IN PARIAMARCA

Age at Death	Battelle Sample (N=47)			1978 Servicio Survey (N=145)
	Male	Female	Total	Total
1 month	4	2	6	Not recorded
1 month to 1 year	16	11	27	256
1 to 2 years	10	11	21	---[a]
2 to 6 years	11	9	20	92
7 to 15 years	1	1	2	11
16 years and over	1	--	1	12
Age unknown	1	--	1	Not recorded
TOTALS	44	34	78	371

[a]SESA survey did not include this category.

considers childbearing as a phenomenon not within her control (see the next section below for further discussion). If circumstances are such that her lack of control is definitive (i.e., if she is menopausal or so fatalistic that she feels unable even to express whether or not she wants more children), there is no reason to have such a discussion with her spouse. Two women in the community have had tubal ligations, and both are among those who want no more children. They agreed to an operation which in turn determined definitively the end of their childbearing years, and they had the support of their husbands as they under went the traumatic experience. Table 13 shows the association between the desire to have more children and spouse communication about the desired number of children.

Most women stated an equal preference for children of either sex (69 percent, N=48), although Torres and Hillenbrand (1978) reported that, in the rural areas of Cajamarca, people regarded women's work as less valuable. A similar number of respondents stated a preference for males (19 percent) or for females (13 percent). The advantages of a family of

TABLE 13

RELATIONSHIP BETWEEN DESIRE FOR CHILDREN AND COMMUNICATION WITH SPOUSE ON THIS ISSUE
(PARIAMARCA, 1979)
(N=43)

	Converses with Spouse on This Issue	
	No	Yes
Wants more children		
Yes	10	3
No	8	17
Control of childbearing out of woman's hands		
Menopausal	3	
Fatalistic	2	
TOTAL RESPONSES	23	20

equal sex composition are put in terms of working and helping parents. Girls help their mothers in the kitchen and in the house, boys help their fathers with their work. "Boys work and care for you; girls serve you: If we do not have girls, who will bring us a glass of water?" Males are preferred because they can have a profession and thus earn a living; also, they are independent, stronger, more respected, and they can maintain their aging parents. Women are more unfortunate, may be the object of deception, and have onerous responsibilities: "Men live alone; the women are in charge of the children; the women suffer; even when men have children, they are alone." The women who expressed a preference for female children argued that girls help more in the tasks of the home, are around more, and look after their parents, whereas little boys go out paseando (frolicking).

The reasons for limiting family size are predominantly economic; there is "nothing good about a big family when you are poor." Mention of poverty, money, the expense of life, and hard times is frequent: "What happens if we fill the earth with children, and there is no way to maintain them? It is a great sadness not to be able to provide for one's children." Women specify food, clothing, and schooling as the important goods that must be provided. Nonetheless, the traditional values, or a

wistfulness for what was once feasible, persist: "When we are many in the home, we are a complete family. There is great happiness in the home of a large family." To some adult women, children are essential: "It is grand to have a large family. The children come with us to help us with the animals; they come with us to the fields. If there are no children, there is nothing. Without children, we are nothing." Children contribute to the work of the household and, if they succeed financially, may help their parents and siblings. Children are a comfort--visiting, attending, and perhaps giving gifts of money to their parents.

Were the economic situation better, people would not feel the desire to limit their families: "Many children would be fine if one had the money, if there were secure work for husband and wife." One spontaneous remark was made about the people living in the Agrarian Reform Cooperative (CAP) communities--that they are better off economically, have good benefits, and therefore "fill themselves with babies." And there is even a rare lament, such as: "People think they want small families--one or two children are fine when you are young, but when you are older, it is sad. There is no one to see us. For the life we have, it is best to have large families."

REPRODUCTIVE KNOWLEDGE AND PRACTICES

The desire to limit family size is unmatched by knowledge or practices. When asked what a man and a woman can do in order not to have so many children, one third of the women respondents (N=45) said that they did not know of any means. Thirty-eight percent reported knowledge of modern methods: pills, injections, operations (sterilization), or contraceptives (the general term). Any such statements were invariably prefaced by reference to proverbial third persons: "They say that one can . . . , they say that there are . . . ." Modern methods are neither known well nor available in the community and are perceived as accessible only to those who have money. Having many children is sometimes referred to as an unavoidable punishment from God. Eighty-four percent (N=44) of the women claimed never to have used any means of contraception (see Table 51). Two women have had tubal ligations because their health was in danger, not because they sought to prevent more births. Before she had admitted to the Battelle field investigator that she had had a ligation, one of these women reported: "Some say if you have lots of children, the operation is good. If you have had only two or three, it's dangerous." No one in the sample had sought any modern contraceptive methods. Eleven percent of the women had relied on abstinence, rhythm, cold water douching, and nursing as means of contraception.

The Battelle field investigator asked one male community member if there were abortion and infanticide in Pariamarca. The man answered that abortion was accomplished by ingesting a large does of mejoral and that people do let their children die of exposure, burying them in the hills. No woman ever mentioned abortion (other than referring to spontaneous abortion when reporting mortality) or infanticide in the course of discussion.

From the point of view of the people of Pariamarca, the economic crisis is keenly felt. The press of poverty, italicized by the three successive drought years of 1976, 1977, and 1978, is a salient reason behind

the desire to limit family size: wanting fewer children is essentially a matter of crisis management. Although there appears to be a general awareness that fertility can be controlled by nonindigenous means, the means and the knowledge of such control are not available to the poor.

TABLE 14

KNOWLEDGE OF CONTRACEPTION
(PARIAMARCA, 1979)

	Number	Percent
Modern methods (pills, injections, operational sterilization, contraceptives)	17	37.8
None	15	33.3
Remedy or cure	6	13.3
Rhythm	3	6.7
Abstinence	2	4.4
Take care (unspecified)	1	2.2
Herbs	1	2.2
TOTAL	45	99.9

TABLE 15

PRACTICE OF CONTRACEPTION
(PARIAMARCA, 1979)

	Number	Percent
Nothing	37	84.1
Operation (tubal ligation)	2	4.5
Abstinence	2	4.5
Rhythm	1	2.3
Cold water douches	1	2.3
Nursing[a]	1	2.3
TOTAL	44	100.0

[a] A few women were asked whether nursing had a contraceptive effect. Of the eight questioned, three said yes, three said no, and two said they did not know. One woman who said she had breastfed a long time to prevent having another baby soon had not spontaneously mentioned breastfeeding as a means of contraception, in answer to the preceding question, have you done anything in order not to have children?

PART IV. THE EFFECTS OF THE SERVICIO SILVO AGROPECUARIO PLAN

In Pariamarca, an economic crisis underlies the development effort being made by the Servicio Silvo Agropecuario (SESA) of the Universidad Nacional Técnica de Cajamarca. Seasonal migration among the poorly educated and permanent out-migration among the better educated are part of this crisis. That the crisis is recognized by the people themselves is apparent in their desire to limit family size and their response to the development effort.

The modernization of agricultural peoples everywhere is marked by their entrance into a cash economy; the resulting process is not new. Prior to his entrance into a cash economy, the farmer was self-sufficient. Now he must have money with which to buy clothes or soap or educational materials. In order to raise such money, the farmer must either grow cash crops or sell his labor or both. Lack of water, the poor soil, and the small, fragmented land plots in Pariamarca, force community members to grow cash crops. Garlic has been the most important cash crop in Pariamarca, but this crop requires a great amount of water. In recent years, Pariamarca has suffered from drought, and the cash crop itself has been subject to blight during the same period.

Pariamarcans are also forced to sell their labor. The synergistic effect of having participated in a cash economy during a period of economic crisis intensifies migration particularly when the main cash crop is in a crippled state. Pariamarcan men practice seasonal migration, commonly going to the coastal sugar fields. However, even this opportunity to earn money has become limited, because opportunities in today's mechanized sugar cooperatives are more restricted than those in yesterday's haciendas which were based on manual labor.

The Servicio Silvo Agropecuario is structured to respond to these and other fundamental needs. The SESA Plan will affect the nutrition of the people of Pariamarca by increasing the quantity and quality of available food. The huerta escolar will increase the diversity of vegetables and fruits in the school children's diets. Terraces are constructed for each water tank built on individually held land; these too will have orchards and vegetable gardens. The community lagoon, stocked with fish, will make animal protein readily available to community members. The general level of agricultural technology will rise, thus increasing production. Improved sanitary conditions, brought about by containing animals in corrals and bringing potable water into individual homes, will contribute to the reduction of morbidity and mortality. The work provided by the Servicio should help to stem out-migration. In achieving such objectives, however, the Servicio is likely to encounter a serious, but preventable situation: rapidly increasing population pressures.

The impact of SESA on women must also be considered. By inhibiting and depressing women's status, the Servicio may actually foster an increase in the rate of population growth in Pariamarca. The Servicio has, thus far, done little to involve Pariamarquinas in its activities. No woman has ever worked for food; none has been taken to Aylambo to visit the model reforestation project; none has participated in activities which would have

exposed her to on-site Servicio training. At most, only three local women have served as officers on committees. Only two or three women were present, with their husbands, during the food distribution observed by the Battelle field investigator (June 9, 1979), even though, according to Ing. Sánchez, it is they who should pick up the food to guarantee that it reaches the family at home and is not dissipated by the men.

The taller de tejidos is intended to provide employment for women as well as for men. Ing. Sánchez believes that women have an important role to play, but that they must function "behind the scenes." He believes that it is critical that they remain at home until the economic situation improves. Thus, women will be confined to cottage industries in the foreseeable future.

Much human behavior is governed by crisis management. Having experienced three consecutive years of drought in a dry, poor community, many women of Pariamarca report that they desire no more children. This finding does not refute the notion that poorer people, especially those who live in rural areas, prefer to have more children to insure a family work force and family security. Indeed, respondents spontaneously explained that it was because of this crisis situation that they could now support only a few children. Despite the expressed desire of these women, the level of fertility in Pariamarca not only continues to be very high, but to be high even within the context of rural Peru (see Table 11 above).

Ing. Pablo Sánchez holds the fundamental belief that fertility will drop as "rurbanization" advances. It is certainly the case in Peru that fertility is lower in the urban areas and among educated women (ENAF, 1977-78). At the present time, however, Ing. Sánchez believes that the exceedingly high infant mortality rate is--and will continue to be--one of the primary constraints to runaway population growth. Perhaps it is for this reason that the Servicio plan does not place much emphasis on health. Health is seen as a futile concern if there is no vida (life), no means of making a living. Ing. Sánchez feels that improving the economic health of the people will do much to improve their physical health. However, at least initially, improved physical conditions will also contribute to population growth, if only because of the drop in mortality. At the same time, Ing. Sánchez has explicitly expressed interest in stemming migration by providing community members with the means of earning a livelihood within the community; this too will increase the population of Pariamarca. The Servicio can help to prevent a runaway population growth by acting now to integrate a family planning component into the development plan and by insuring and emphasizing the presence of women in the development effort. Though responsive to the findings of this study--that women wish to limit family size--SESA personnel believe that a family planning program, unless carefully designed, would elicit negative political reactions. Furthermore, in early September 1979, the government placed a moratorium on all service delivery. (This action coincided with a series of public utterances of the Catholic Church expressing displeasure with family planning delivered out of the context of family education.)

Knowledge of cultural patterns is always important in establishing successful family planning programs; indeed, it provides an important basis for all development activities.[8] For example, women do not seem to have any concept of a waiting period between the inception of a union and conception, yet, they do often experience a first union which ends in separation and results in children who may not be well-accepted by the next spouse. Thus, birth control may be very appealing to a woman who

perceives it as a means of preventing conception until she can be more certain of the stability of the union.

The importance of involving women in the development plan should not be underrated. The suggestion that women are performing a stronger role currently because of the management required of them when their spouses are away implies that this may be a good stage in the development process to work with them--because their position may be weaker when migration is reduced. Stemming migration may mean a certain resurrection of the role traditional of wives of subsistence farmers. If a woman's husband regularly leaves the community, she is in charge when he is gone: "When we are alone, we can make decisions. When husbands are working far away; we do all the work to maintain ourselves." Seasonal migration is common throughout the world, but it is likely to have a stronger positive effect on the status of women in a society in which households are nuclear and very independent and in which inheritance is bilateral. The permanent return of a woman's husband is likely to weaken her power as a decision maker.

The social worker in the Servicio, Anné Centurión, has suggested that a staff of three, a social worker, a family educator, and a promotora comunal (a local woman to participate on the staff) could train groups of women in Pariamarca, form sewing workshops, hold talks on nutrition, and demonstrate the uses of food resources in the area.

Other opportunities are immediately available to reinforce women's roles. At least two of the four people to be given artisan fellowships could be women. The Mothers' Club is an important potential vehicle for women's activities in the community. Already, the Mothers' Club has incorporated elements of education, health (including information on reproduction), nutrition, religion, sociability, and organization skills. A catholic nun has given talks on paternal responsibility. The male nurse recently finished an intensive one-week course on nutrition, so that he could teach this subject to his "mothers." The Battelle field investigator gave a gift of some very large pots and utensils to the women of Pariamarca, in lieu of payment for interviews. This gift elicited the formation of the first women's comité, formed at a session of the Mothers' Club on June 18, 1979; the comité was charged with the safekeeping of the gift. The gift will be used in nutrition classes planned by the Servicio social worker; in parenting classes with a special emphasis on feeding, held by the kindergarten teacher for a group of mothers of children from birth to three years of age; or by any women's group or by individual women in Pariamarca for school functions, fiestas, etc.

FOOTNOTES

1. The land upon which trees are being planted was once forested; by the time the Spanish conquerors came to the area, there was good ground cover, but only small, scrubby trees remained.

2. The Servicio Silvo Agropecuario (SESA) 1978 survey included data from Pariamarca Pueblo, Pariamarca Caserío, Cashapampa, Chimba, and Agomarca.

3. In the 1978 SESA survey, respondents who had obtained help from traditional healers specified going to a curioso (folk practitioner), rather than to a brujo (sorceror).

4. The 1972 Census data from Greater Pariamarca used in this report is from the following pueblos and caserios: Pariamarca Pueblo, Pariamarca Caserío, Cashapampa, Amushulca, Agomarca, Paccha, Paccha Chica, Paccha Grande.

5. There are different mother-infant food distribution centers in Pariamarca sponsored by U.S. Public Law 480 and administered through CARITAS, a Catholic relief organization; these include centers with refectories, in which a daily meal is served and food is prepared to be taken home.

6. Further information is needed in order to ascertain what other aspects of folk medicine may be within her ken.

7. "World Population Data Sheet," 1979, Population Reference Bureau.

8. A thorough knowledge of indigenous technology could sometimes serve to improve the way in which technology is introduced; the real problem may be lack of resources to implement the technology rather than lack of the technology, as is so often assumed (Cotler, 1979).

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APPENDIX A

BATTELLE SAMPLE

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BATTELLE SAMPLE

In the limited time available, between June 6 and June 20, 1979, a total of 52 women between the ages of 14 and 49 were interviewed. The sample is not random, but an attempt was made to distribute the women into different cohorts of potential childbearing ages. Table A-1 shows the distribution of the sample by age.

TABLE A-1

DISTRIBUTION OF WOMEN RESPONDENTS BY AGE
(PARIAMARCA, CAJAMARCA, PERU)

Age	Number	Percent
10-14	1	1.9
15-19	6	11.5
20-24	10	19.2
25-29	7	13.5
30-34	9	17.3
35-39	7	13.5
40-44	7	13.5
45-49	5	9.6
Total	52	100.0

Nearly 85 percent of the women interviewed were Pariamarquinas. The distribution of respondents by birthplace is shown in Table A-2. The Battelle field investigator interviewed 30 of these women; the Servicio social worker interviewed 22. The Battelle investigator also interviewed 5 teachers, including the school director; the male nurse in charge of the medical post; and a prominent community leader. In addition, continual contact with community members provided the investigator with invaluable insights into the community--and also provided the Pariamarcans with some insights into her investigation.

Women were interviewed in their homes. An effort was made to interview a woman without the presence of her husband. One version of the interview was used for the first 10 respondents; a shortened version was used for the last 42 women in the sample.

TABLE A-2

DISTRIBUTION OF WOMEN RESPONDENTS BY PLACE OF BIRTH
(PARIAMARCA, CAJAMARCA, PERU)

Place of Birth	Number	Percent
PARIAMARCA	43	84.9
Pariamarca (pueblo, or not specified)	28	54.0
Cashapampa	10	19.4
Agomarca	3	5.8
Shiliarume	1	1.9
Amushulca	1	1.9
La Chimba	1	1.9
CAJAMARCA	3	5.7
Cajamarca (city)	2	3.8
Calispuquio	1	1.9
OTHER	5	9.5
Ceres	1	1.9
San Juan	1	1.9
Tulpina	1	1.9
Olmos	1	1.9
Casa Grande	1	1.9
TOTAL	52	100.1

APPENDIX B

GENERAL OUTLINE OF THE 18-YEAR PLANNING CYCLE OF THE SERVICIO SILVO AGROPECUARIO (SESA)

APPENDIX B

GENERAL OUTLINE OF THE 18-YEAR PLANNING CYCLE
OF THE SERVICIO SILVO AGROPECUARIO (SESA)

Phase I: Mobilization (Years 1-9)*

- Period 1: Initiation (Years 1-3)

Year 1: The Servicio gains acceptance in the community.

1. The Servicio conducts a needs assessment study of the community.

2. The Servicio meets with community leaders and members.

3. Members of the community visit Aylambo, a model forestry park that has a taller (artisan workshop and school).

4. If the Servicio is accepted, a Comité de Desarrollo (Development Committee) is organized and a list of the community's needs is presented.

5. The Servicio begins to provide informal, on-site training for activities performed in the community, a service which continues throughout the plan.

Year 2: The Comité de Desarrollo (Development Committee) is organized.

1. The Comité de Desarrollo and its subcommittees are chosen at a general assembly.

2. The Comité de Desarrollo elects its officers, an executive committee, and eight standing subcommittees.
   a. Riego y represas (irrigation and water storage).
   b. Vial (roads).
   c. Educativo (education).
   d. Pecuario (animal husbandry).
   e. Agrícola y forestal (agriculture and forestry).
   f. Salud (health).
   g. Artesanía (artisan).
   h. Comercialización (commerce).

3. The subcommittees and their ad hoc committees direct all community development projects.

Year 3: The work plan is presented, and work begins.

1. The work plan is presented to the community by the Servicio at an assembly, and specific problems are ironed out.

2. The territory is prepared for development:
   a. A road is built to transport machinery; construction is directed by the Subcomité Vial.
   b. A Servicio storage room is built for tools and materials.

3. The huerta escolar (garden of the school children, consisting of vegetables, fruits, and flowers) is planted.

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*To date, Phase I, Period 1 is the only segment of the plan that has been completed, and only in Pariamarca has work progressed this far.

- Period 2: Intensive Construction (Years 4-6)

  1. The basic infrastructure is built, so that further work can proceed.
     a. Roads, footpaths, and bridges are built or improved.
     b. Canals are cleaned, and irrigation and potable water projects are initiated.

  2. Other construction is completed.
     a. Most of the tanks and reservoirs for potable water are completed.
     b. The escuela azul (blue school) is built or remodeled.
     c. The tambo (community store) is established.
     d. The taller (artisan workshop and school), including a carpentry and tailoring program, is established.
     e. A lagoon ecosystem is completed.
     f. Corrals and animal stalls are built for individual households.
     g. An albergue (hostel) is established.

  3. Maintenance is initiated for the infrastructure and the completed projects.

  4. The planting of the forest is begun.

  5. Initial agricultural and animal husbandry work begins.

  6. Planners seek extensive financial backing for labor, materials, and personnel to cover the cost of this, the most expensive, period.

- Period 3: First Resources Generated (Years 7-9)

  1. Main components are in full operation.
     a. The escuela azul (blue school) is functioning.

     b. The tambo (community store) has begun to purchase community members' products at a fixed price; profits on sales are to be used for community purposes.
     c. The taller (artisan workshop and school) is functioning.
     d. The huerta escolar (orchard and garden of the school children) is functioning.

  2. The infrastructure is improved.
     a. There is potable water in all individual homes.
     b. Haif of the homes in the communy have bath facilties.
     c. Most of the homes in the community have septic tanks.
     d. A Servicio-owned truck increases communication and services among the community stores of the various communities.

  3. Forest management is established.

  4. Intensive work begins in agriculture and animal husbandry.
     a. A seed bank is established.
     b. Farmers are taught to compost.
     c. Breeding patterns are set for animals.
     d. Community members are trained in pasture composition and the carrying capacity of pastures.

  5. The construction of rural villages is based on the availability of water.

  6. Nonconventional energy projects (e.g., solar) are initiated.

  7. An infrastructure for tourism is initiated in some communities.

Phase II: Momentum (Years 10-18)

- Period 1: Realization of Availability of Firewood, Water, and Electricity (Years 10-12)

  1. Forest management begins in earnest as the first forest growth becomes ready for use as firewood.
  2. The intensive work in agriculture and animal husbandry can now be properly exploited.
  3. The most efficient use of the available water in the area can now be realized.
  4. A public telephone is installed.
  5. Electricity is brought into individual homes.
  6. Artisan activities and the quality of artisan products are upgraded.
  7. More specialized artisan schools are planned.
  8. Studies are made of the market and production costs.

- Period 2: Refinement (Years 13-15)

  1. Forest management continues as the first growth continues to be exploited.
  2. Constant conditioning of land and homes continues.
  3. Semi-industrial or artisan plants are established.
  4. The studies of the market and production costs are elaborated.
  5. The studies related to maximized use of existing resources and those generated by the system are elaborated. Studies regarding the use of wood for industrial purposes (e.g., the paper and construction industries) become especially important.
  6. Tourist centers are established in some communities.
  7. Services (e.g., mail, transportation) are intensified in larger population centers.

- Period 3: Achievement of Development (Years 16-18)

  1. Factories and an infrastructure for the exploitation of wood and its subproducts are constructed.
  2. Hydraulic energy centers are established.
  3. There is further development of artisan industries in relation to the local market and the level of technology reached in the community.